



SEQUENCE LISTING

<110> Zur Megede, Jan
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van Rensburg, Estrelita Janse

<120> Polynucleotides Encoding Antigenic HIV Type C Polypeptides,
Polypeptides and Uses Thereof

<130> PP01631.102

<140> 09/899,575

<141> 2001-07-05

<150> 09/610,313

<151> 2000-07-05

<160> 147

<170> PatentIn version 3.4

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<213> Human immunodeficiency virus

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<220>
<223> Env common region of HIV strain AF110968

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<223> synthetic gp120 coding region of HIV strain AF110968	
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tggccaccc acgcctgcgt gcccacccgac cccaacccccc aggagatcgt gctggagaac	180
gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatgca cgaggacatc	240
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atgcgcgaca actggcgcaa cgagctgtac aagtacaagg tggtgagat caagccctg	1380
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<212> DNA
<213> Artificial

<220>
<223> synthetic gp140 coding region of HIV strain AF110968

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tgcatcatca acaagaccga gtggaacacgc accctgcagg gcgtgagcaa gaagctggag	960
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<212> DNA
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<223> synthetic gp160 coding region of HIV strain AF110968

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cgcaggcgt	tcgaggccgc	cctgcag				2547

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gaccgcgaga	tcaacaacta	caccgacacc	atctaccgccc	tgctggagga	gagccagaac	420
cagcaggaga	agaacgagaa	ggacctgctg	gccctggaca	gctggcagaa	cctgtggaac	480
tggttcagca	tcaccaactg	gctgtggta	atcaagatct	tcatcatgat	cgtggcgcc	540
ctgatcgccc	tgcgcacatcat	cttcgcccgtg	ctgagcatcg	tgaaccgcgt	gcccaggcgc	600
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cgcacatcgagg	aggagggcgg	cgagcaggac	cgcggccgca	gcatccgcct	ggtgagcggc	720
ttcctggccc	tggcctggga	cgacctgcgc	agcctgtgcc	tgttcagcta	ccaccgcctg	780
cgcgacttca	tcctgatcgc	cgcccgcggt	ctggagctgc	tggccagcg	cggctggag	840
gccctgaagt	acctggcag	cctgggtcag	tactgggccc	tggagctgaa	gaagagcgcc	900
atcagcctgc	tggacaccat	cgccatcgcc	gtggccgagg	gcaccgaccg	catcatcgag	960
ttcatccagc	gcatctgccc	cgccatccgc	aacatcccccc	gccgcattccg	ccagggcttc	1020
gaggccgccc	tgcag					1035

<210> 11
<211> 144
<212> DNA
<213> Artificial

<220>
<223> synthetic Env common region of HIV strain AF110975

<400> 11	agcatcatca	ccctgcctg	ccgcacatcaag	cagatcatcg	acatgtggca	gaaggtggc	60
	cgcgcacatct	acgccccccc	catcgagggc	aacatcacct	gcagcagcag	catcaccggc	120
	ctgctgctgg	cccgcgacgg	cgcc				144

<210> 12
<211> 1437
<212> DNA
<213> Artificial

<220>

<223> synthetic gp120 coding region of HIV strain AF110975

<400> 12

agccgcctgg	gcaacctgtg	ggtgaccgtg	tacgacggcg	tgcccgtgtg	gcgcgaggcc	60
agcaccaccc	tgttctgcgc	cagcgacgcc	aaggcctacg	agaaggaggt	gcacaacgtg	120
tgggccaccc	acgcctgcgt	gcccacccgac	cccaaccccc	aggagatcga	gctggacaac	180
gtgaccgaga	acttcaacat	gtggaagaac	gacatggtgg	accagatgca	cgaggacatc	240
atcagcctgt	gggaccagag	cctgaagccc	cgcgtgaagc	tgacccccc	gtgcgtgacc	300
ctgaagtgca	ccaactacag	caccaactac	agcaacacca	tgaacgcccac	cagctacaac	360
aacaacacca	ccgaggagat	caagaactgc	acttcaaca	tgaccaccga	gctgcgcgac	420
aagaagcagc	aggtgtacgc	cctgttctac	aagctggaca	tcgtgccc	taacagcaac	480
agcagcgagt	accgcctgat	caactgcaac	accagcgcca	tcacccaggc	ctgccccaa	540
gtgagttcg	accccatccc	catccactac	tgcgc	ccggctacgc	catcctgaag	600
tgcaagaaca	acaccagcaa	cggcacccggc	ccctgccaga	acgtgagcac	cgtcagtgc	660
acccacggca	tcaagcccgt	ggtgagcacc	cccctgctgc	tgaacggcag	cctggccgag	720
ggccgcgaga	tcatcatccg	cagcaagaac	ctgagcaaca	acgcctacac	catcatcgtg	780
cacctgaacg	acagcgtgga	gatcgtgtgc	acccgcccc	acaacaacac	ccgcaagggc	840
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caggcccact	gcaacatcag	cggcggcgag	tggaaacaagg	ccgtgcagcg	cgtgagcgcc	960
aagctgcgcg	agcacttccc	caacaagacc	atcgagttcc	agcccagcag	cgccggcgac	1020
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aagctgttca	acagcagcta	caacggcacc	agctaccgcg	gcaccgagag	caacagcagc	1140
atcatcaccc	tgcctgccc	catcaagcag	atcatcgaca	tgtggcagaa	ggtggccgc	1200
gccatctacg	cccccccat	cgagggcaac	atcacctgca	gcagcagcat	caccggcctg	1260
ctgctggccc	gcgacggcg	cctggacaac	atcaccaccc	agatcttccg	cccccaggc	1320
ggcgacatga	aggacaactg	gwgcaacgag	ctgtacaagt	acaaggttgt	ggagatcaag	1380
ccccctggcg	tggcccccac	cgaggccaag	cgccgcgtgg	tggagcgcga	gaagcgc	1437

<210> 13

<211> 1950

<212> DNA

<213> Artificial

<220>
 <223> synthetic gp140 coding region of HIV strain AF110975
 <400> 13
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 agcaccaccc tggctgcgc cagcgacgcc aaggcctacg agaaggaggt gcacaacgtg 120
 tggccaccc acgcctgcgt gcccacccgac cccaaaccccc aggagatcga gctggacaac 180
 gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatgca cgaggacatc 240
 atcagcctgt gggaccagag cctgaagccc cgctgtgaagc tgaccccccgtgtgcgtgacc 300
 ctgaagtgc acaactacag caccaactac agcaacacca tgaacgcccac cagctacaac 360
 aacaacacca ccgaggagat caagaactgc accttcaaca tgaccaccga gctgcgcgac 420
 aagaaggcgc aggtgtacgc cctgttctac aagctggaca tcgtgcccctt gaacagcaac 480
 agcagcgagt accgcctgtat caactgcaac accagcgcca tcacccaggc ctgccccaaag 540
 gtgagcttcg accccatccc catccactac tgccgcggcc cgccgtacgc catcctgaag 600
 tgcaagaaca acaccagcaa cggcacccggc ccctgccaga acgtgagcac cgtcagtg 660
 acccacggca tcaagcccggt ggtgagcacc cccctgctgc tgaacggcag cctggccgag 720
 ggccggcgaga tcatcatccg cagcaagaac ctgagcaaca acgcctacac catcatcg 780
 cacctgaacg acagcgtgga gatcgtgtgc acccgccccca acaacaacac ccgcaagggc 840
 atccgcacatcg gccccggcca gaccttctac gccaccgaga acatcatcg cgacatccgc 900
 caggcccact gcaacatcg cgccggcgag tggaaacaagg ccgtgcagcg cgtgagcgcc 960
 aagctgcgcg agcacttccc caacaagacc atcgagttcc agcccgagcag cggccggcgac 1020
 ctggagatca ccacccacag cttcaactgc cgccggcgagt tcttctactg caacaccagc 1080
 aagctgttca acagcagcta caacggcacc agtaccgcg gcaccgagag caacagcagc 1140
 atcatcaccc tggccctgccc catcaagcag atcatcgaca tgtggcagaa ggtggccgc 1200
 gccatctacg cccccccat cgagggcaac atcacctgca gcagcagcat caccggcctg 1260
 ctgctggccc gcgacggcggt cctggacaac atcaccaccc agatcttccg ccccccaggc 1320
 ggcgacatga aggacaactg gcgcaacgag ctgtacaagt acaaggtggt ggagatcaag 1380
 cccctggccg tggcccccac cgaggccaaag cgccgcgtgg tggagcgcga gaagcgcgc 1440
 gtgggcacatcg gcgccgtat cttcggcttc ctggccgcgg ccggcagcaa catggccgc 1500
 gccagcatca ccctgaccgc ccaggcccgc cagctgctga gcggcatcgt gcagcagcag 1560

agcaacctgc	tgcgcgccat	cgaggcccag	cagcacatgc	tgcagctgac	cgtgtgggc	1620
atcaaggcagc	tgcaggcccc	cgtgctggcc	atcgagcgct	acctgaagga	ccagcagctg	1680
ctgggcatct	ggggctgcag	cggcaagctg	atctgcacca	ccaccgtgcc	ctggAACAGC	1740
agctggagca	acaagaccca	gggcgagatc	tgggagaaca	tgacctggat	gcagtggac	1800
aaggagatca	gcaactacac	cggcatcatac	taccgcctgc	tggaggagag	ccagaaccag	1860
caggagcaga	acgagaagga	cctgctggcc	ctggacagcc	gcaacaacct	gtggagctgg	1920
ttcaacatca	gcaactggct	gtggatcacatc				1950

<210> 14
<211> 2493
<212> DNA
<213> Artificial

<220>
<223> synthetic gp160 coding region of HIV strain AF110975

<400> 14						
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tggccaccc	acgcctgcgt	gccaccgac	cccaacccccc	aggagatcga	gctggacaac	180
gtgaccgaga	acttcaacat	gtggaagaac	gacatggtgg	accagatgca	cgaggacatc	240
atcagcctgt	gggaccagag	cctgaagccc	cgcgtgaagc	tgacccccc	gtgcgtgacc	300
ctgaagtgca	ccaaactacag	caccaactac	agcaacacca	tgaacgccac	cagctacaac	360
aacaacacca	ccgaggagat	caagaactgc	acttcaaca	tgaccaccga	gctgcgcgac	420
aagaagcagc	aggtgtacgc	cctgttctac	aagctggaca	tcgtgccc	taacagcaac	480
agcagcgagt	accgcctgtat	caactgcaac	accagcgcca	tcacccaggc	ctgccccaa	540
gtgagcttcg	acccatccc	catccactac	tgcgc	ccggctacgc	catcctgaag	600
tgcaagaaca	acaccagcaa	cggcacccggc	ccctgccaga	acgtgagcac	cgtcagtg	660
acccacggca	tcaagccgt	ggtgagcacc	cccctgctgc	tgaacggcag	cctggccgag	720
ggcggcgaga	tcatcatccg	cagcaagaac	ctgagcaaca	acgcctacac	catcatcgtg	780
cacctgaacg	acagcgtgga	gatcgtgtgc	acccggccca	acaacaacac	ccgcaagggc	840
atccgcatcg	gccccggcca	gaccttctac	gccaccgaga	acatcatcgg	cgacatccgc	900
caggcccact	gcaacatcag	cggcggcgag	tggaaacaagg	ccgtgcagcg	cgtgagcgcc	960
aagctgcg	agcacttccc	caacaagacc	atcgagttcc	agcccagcag	cgccggcgac	1020

ctggagatca ccacccacag cttcaactgc cgccgcgagt tcttctactg caacaccaggc	1080
aagctgttca acagcagcta caacggcacc agctaccgcg gcaccgagag caacagcagc	1140
atcatcaccc tgccctgccg catcaagcag atcatcgaca tgtggcagaa ggtggccgc	1200
gccatctacg cccccccat cgagggcaac atcacctgca gcagcagcat cacccggcctg	1260
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gccagcatca ccctgaccgc ccaggcccgc cagctgctga gcggcatcgt gcagcagcag	1560
agcaacctgc tgcgccat cgaggcccag cagcacatgc tgcagctgac cgtgtgggc	1620
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gagctgaaga agagcgccac cagcctgctg gacagcatcg ccacgcgtgt ggccgagggc	2400
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cgcgatcgcc agggcttcga gcccgcctg cag	2493

<210> 15
 <211> 2565
 <212> DNA
 <213> Artificial

<220>

<223> synthetic signal sequence and gp160 coding region of HIV strain AF110975

<400> 15

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ttctggatct	gcagcgccct	ggcaacctg	tgggtgaccg	tgtacgacgg	cgtccccgtg	120
tggcgcgagg	ccagcaccac	cctgttctgc	gccagcgacg	ccaaggccta	cgagaaggag	180
gtgcacaacg	tgtggccac	ccacgcctgc	gtgcccaccc	accccaaccc	ccaggagatc	240
gagctggaca	acgtgaccga	gaacttcaac	atgtgaaaga	acgacatgg	ggaccagatg	300
cacgaggaca	tcatcagcct	gtgggaccag	agcctgaagc	cccgctgaa	gctgacccccc	360
ctgtgcgtga	ccctgaagt	caccaactac	agcaccaact	acagcaacac	catgaacgccc	420
accagctaca	acaacaacac	caccgaggag	atcaagaact	gcaccttcaa	catgaccacc	480
gagctgcgcg	acaagaagca	gcaggtgtac	gccctgttct	acaagctgga	catcggtccc	540
ctgaacagca	acagcagcga	gtaccgcctg	atcaactgca	acaccagcgc	catcacccag	600
gcctgccccca	aggtgagctt	cgacccatc	cccatccact	actgcgc	cgccggctac	660
gccatcctga	agtgcagaa	caacaccaggc	aacggcaccg	gcccctgcca	gaacgtgagc	720
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aaggtgggcc	gcccacatcta	cggccccc	atcgagggca	acatcacctg	cagcagcagc	1320
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cgcggccagg	gcggcgacat	gaaggacaac	tggcgcaacg	agctgtacaa	gtacaagggt	1440
gtggagatca	agccctgggg	cgtggccccc	accgaggcca	agcgccgcgt	ggtggagcgc	1500
gagaagcgcg	ccgtggcat	cggcgccgtg	atctcggct	tcctggcgc	cgccggcagc	1560

aacatggcg	ccgcccagcat	caccctgacc	gcccaaggccc	gccagctgct	gagcggcatc	1620
gtgcagcagc	agagcaacct	gctgcgcgcc	atcgaggccc	agcagcacat	gctgcagctg	1680
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cgcaggcgt	acagccccct	gagttccag	accctgaccc	ccaacccccc	cggcctggac	2160
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caccgcctgc	gcgaccctgat	cctggtgacc	gcccgcgtgg	tggagctgct	ggccgcgcagc	2340
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tactggggcc	tggagctgaa	gaagagcgcc	accagcctgc	tggacagcat	cgccatcgcc	2460
gtggccgagg	gcaccgaccg	catcatcgag	gtgatccagc	gcatctaccg	cgccttctgc	2520
aacatcccc	gccgcgtgcg	ccagggcttc	gaggccgccc	tgcag		2565

<210> 16
 <211> 1056
 <212> DNA
 <213> Artificial

<220>
 <223> synthetic a gp41 coding region of HIV strain AF110975

<400> 16	60					
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gccgccagca	tcaccctgac	cgcgcaggcc	cgcgcgtgc	tgagcggcat	cgtgcagcag	120
cagagcaacc	tgctgcgcgc	catcgaggcc	cagcagcaca	tgctgcagct	gaccgtgtgg	180
ggcatcaagc	agctgcaggc	ccgcgtgctg	gccatcgagc	gctacctgaa	ggaccagcag	240
ctgctggca	tctggggctg	cagcggcaag	ctgatctgca	ccaccaccgt	gccctggAAC	300
agcagctgga	gcaacaagac	ccagggcgag	atctggaga	acatgacctg	gatgcagtgg	360
gacaaggaga	tcagcaacta	caccggcattc	atctaccgc	tgctggagga	gagccagaac	420

cagcaggagc	agaacgagaa	ggacctgctg	gccctggaca	gccgcaacaa	cctgtggagc	480
tggttcaaca	ttagcaactg	gctgtggtac	atcaagatct	tcatcatgat	cgtggcgcc	540
ctgatcgccc	tgcgcacatcat	cttcgcccgtg	ctgagcatcg	tgaaccgcgt	gcgcaggc	600
tacagcccc	tgagctcca	gaccctgacc	cccaacccc	gcggcctgga	ccgcctggc	660
cgcatcgagg	aggagggcgg	cgagcaggac	cgcgaccgc	gcatccgcct	ggtgcaggc	720
ttcctggccc	tggcctggga	cgacctgcgc	agcctgtgcc	tgttcagcta	ccaccgcctg	780
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ggcacggacc	gcatcatcga	ggtgatccag	cgcatctacc	gcgccttctg	caacatcccc	1020
cgccgcgtgc	gccagggctt	cgaggccgccc	ctgcag			1056

<210> 17

<211> 492

<212> PRT

<213> Human immunodeficiency virus

<400> 17

Met	Gly	Ala	Arg	Ala	Ser	Ile	Leu	Arg	Gly	Gly	Lys	Leu	Asp	Ala	Trp
1						5			10					15	

Glu	Arg	Ile	Arg	Leu	Arg	Pro	Gly	Gly	Lys	Lys	Cys	Tyr	Met	Met	Lys
		20					25					30			

His	Leu	Val	Trp	Ala	Ser	Arg	Glu	Leu	Glu	Lys	Phe	Ala	Leu	Asn	Pro
						35			40			45			

Gly	Leu	Leu	Glu	Thr	Ser	Glu	Gly	Cys	Lys	Gln	Ile	Ile	Arg	Gln	Leu
						50		55		60					

His	Pro	Ala	Leu	Gln	Thr	Gly	Ser	Glu	Glu	Leu	Lys	Ser	Leu	Phe	Asn
						65		70		75			80		

Thr	Val	Ala	Thr	Leu	Tyr	Cys	Val	His	Glu	Lys	Ile	Glu	Val	Arg	Asp
							85		90			95			

Thr	Lys	Glu	Ala	Leu	Asp	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Cys	Gln
						100			105			110			

Gln Lys Ile Gln Gln Ala Glu Ala Ala Asp Lys Gly Lys Val Ser Gln
115 120 125

Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Ala
130 135 140

Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu Glu Lys
145 150 155 160

Ala Phe Ser Pro Glu Val Ile Pro Met Phe Thr Ala Leu Ser Glu Gly
165 170 175

Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His
180 185 190

Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala
195 200 205

Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly
210 215 220

Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr
225 230 235 240

Leu Gln Glu Gln Ile Ala Trp Met Thr Ser Asn Pro Pro Ile Pro Val
245 250 255

Gly Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val
260 265 270

Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Lys Gln Gly Pro Lys
275 280 285

Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu Arg Ala
290 295 300

Glu Gln Ser Thr Gln Glu Val Lys Asn Trp Met Thr Asp Thr Leu Leu
305 310 315 320

Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Arg Ala Leu Gly
325 330 335

Pro Gly Ala Ser Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly
340 345 350

Gly Pro Ser His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Ala
355 360 365

Asn Thr Ser Val Met Met Gln Lys Ser Asn Phe Lys Gly Pro Arg Arg
370 375 380

Ile Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Arg Asn
385 390 395 400

Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly
405 410 415

His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys
420 425 430

Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe Leu Gln Ser Arg
435 440 445

Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Arg Phe Glu Glu Thr
450 455 460

Thr Pro Gly Gln Lys Gln Glu Ser Lys Asp Arg Glu Thr Leu Thr Ser
465 470 475 480

Leu Lys Ser Leu Phe Gly Asn Asp Pro Leu Ser Gln
485 490

<210> 18

<211> 81

<212> DNA

<213> Artificial

<220>

<223> synthetic signal sequence of HIV strain AF110968

<400> 18

atgcgcgtga tggcgttccct gaagaactac cagcagtgggt ggatgtgggg catcctgggc 60

ttctggatgc tgatcatcag c 81

<210> 19

<211> 72

<212> DNA
 <213> Artificial

 <220>
 <223> synthetic signal sequence of HIV strain AF110975

 <400> 19
 atgcgcgtgc gcggcatcct ggcgcagctgg cagcagtggt ggatctgggg catcctggc 60
 ttctggatct gc 72

 <210> 20
 <211> 1479
 <212> DNA
 <213> Artificial

 <220>
 <223> synthetic Gag coding sequence of HIV strain AF110965

 <400> 20
 atggcgccc gcgccagcat cctgcgcggc ggcaagctgg acgcctggga ggcgcattccgc 60
 ctgcgccccg gcggcaagaa gtgctacatg atgaagcacc tgggtgtggc cagccgcgag 120
 ctggagaagt tcgcccctgaa ccccgccctg ctggagacca gcgaggggctg caagcagatc 180
 atccgcccagc tgcaccccgcc cctgcagaccc ggcagcgagg agctgaagag cctgttcaac 240
 accgtggcca ccctgtactg cgtgcacgag aagatcgagg tgcgcgacac caaggaggcc 300
 ctggacaaga tcgaggagga gcagaacaag tgccagcaga agatccagca ggccgaggcc 360
 gccgacaagg gcaagggtgag ccagaactac cccatcgatc agaacctgca gggccagatg 420
 gtgcaccagg ccatcagccc ccgcaccctg aacgcctggg tgaagggtat cgaggagaag 480
 gccttcagcc ccgaggtgat ccccatgttc accgcctgaa gcgaggggcgc caccggcc 540
 gacctgaaca ccatgctgaa caccgtgggc ggccaccagg ccgcctgca gatgctgaag 600
 gacaccatca acgaggaggc ccgcgcgtgg gaccgcgtgc accccgtgca cgccggcccc 660
 atcgcccccg gccagatgatcg cgagccccgc ggcagcgaca tcgcccggcac caccagcacc 720
 ctgcaggaggc agatcgccctg gatgaccaggc aaccccccata tccccgtggg cgacatctac 780
 aagcgctgga tcatcctggg cctgaacaag atcgtgcgca tgtacagccc cgtgagcatc 840
 ctggacatca agcaggggccc caaggagccc ttccgcgact acgtggaccg cttttcaag 900
 accctgcgcg ccgagcagag cacccaggag gtgaagaact ggatgaccga caccctgctg 960
 gtgcagaacg ccaaccccgaa ctgcaagacc atcctgcgcg ccctggggccc cggccgcgc 1020
 ctggaggaga tggatgaccgc ctgcccaggcc gtggcgccgc ccagccacaa ggccgcgtg 1080

ctggccgagg ccatgagcca ggccaacacc agcgtatga tgcagaagag caacttcaag	1140
ggccccggcc gcatcgtaa gtgcttcaac tgccgcaagg agggccacat cgcccgcaac	1200
tgcccgccc cccgcaagaa gggctgctgg aagtgcggca aggagggcca ccagatgaag	1260
gactgcaccg agcgccaggc caacttcctg ggcaagatct ggcccagcca caagggccgc	1320
cccgcaact tcctgcagag ccgccccgag cccaccgccc ccccgccga gagcttccgc	1380
ttcgaggaga ccacccccc ccagaagcag gagagcaagg accgcgagac cctgaccagc	1440
ctgaagagcc tggtcgcaa cgacccctg agccagtaa	1479

<210> 21
<211> 1509
<212> DNA
<213> Artificial

<220>
<223> synthetic Gag coding sequence of HIV strain AF110967

<400> 21	
atgggcgccc ggcgcagcat cctgcgcggc gagaagctgg acaagtggga gaagatccgc	60
ctgcgcggcc gggcaagaa gcactacatg ctgaagcacc tgggtgtggc cagccgcgag	120
ctggagggt tcgcccgtaa ccccgccctg ctggagaccg ccgagggtctg caagcagatc	180
atgaagcagc tgcagccgc cctgcagacc ggcaccgagg agctgcgcag cctgtacaac	240
accgtggcca ccctgtactg cgtgcacgcc ggcacatcgagg tgcgcgacac caaggaggcc	300
ctggacaaga tcgaggagga gcaacaacaag agccagcaga agacccagca ggccaaggag	360
gccgacggca aggtgagcca gaactacccc atcgtgcaga acctgcaggg ccagatggtg	420
caccaggcca tcagccccg caccctgaac gcctgggtga aggtgatcga ggagaaggcc	480
ttcagccccg aggtgatccc catgttcacc gccctgagcg agggcgccac ccccccaggac	540
ctgaacacca tgctgaacac cgtggcggc caccaggccg ccatgcagat gctgaaggac	600
accatcaacg aggaggccgc cgagtggac cgcctgcacc ccgtgcaggg cggccccgtg	660
ccccccggcc agatgcgcga ccccccggc agcgacatcg ccggcgccac cagcacccctg	720
caggagcaga tcgcctggat gaccagcaac ccccccgtgc ccgtgggcga catctacaag	780
cgctggatca tcctgggcct gaacaagatc gtgcgcattgt acagccccgt gagcatcctg	840
gacatccgccc agggcccaa ggagcccttc cgcgactacg tggaccgcctt cttcaagacc	900
ctgcgcgccc agcaggccac ccaggacgtg aagaactgga tgaccgagac cctgctggtg	960
cagaacgcca acccccactg caagaccatc ctgcgcgccc tggggccccc cgccacccctg	1020

gaggagatga	tgaccgcctg	ccagggcgtg	ggcgcccccg	gccacaaggc	ccgcgtgctg	1080
gccgaggcca	tgagccaggc	caacagcgtg	aacatcatga	tgcagaagag	caacttcaag	1140
ggcccccgcc	gcaacgtgaa	gtgcttcaac	tgcggcaagg	agggccacat	cgccaagaac	1200
tgccgcgccc	cccgcaagaa	gggctgctgg	aagtgcggca	aggagggcca	ccagatgaag	1260
gactgcacccg	agcgccaggc	caacttcctg	ggcaagatct	ggcccagcca	caagggccgc	1320
cccgcaact	tcctgcagaa	ccgcagcgag	cccgcgcccc	ccaccgtgcc	caccgcffff	1380
cccgccgaga	gcttccgctt	cgaggagacc	accccgcccc	ccaagcagga	gccccaggac	1440
cgcgagccct	accgcgagcc	cctgaccgccc	ctgcgcagcc	tgttcggcag	cggcccccctg	1500
agccagtaa						1509

<210> 22
 <211> 502
 <212> PRT
 <213> Human immunodeficiency virus

<400> 22

Met	Gly	Ala	Arg	Ala	Ser	Ile	Leu	Arg	Gly	Glu	Lys	Leu	Asp	Lys	Trp
1															15

Glu	Lys	Ile	Arg	Leu	Arg	Pro	Gly	Gly	Lys	Lys	His	Tyr	Met	Leu	Lys
															30
20															

His	Leu	Val	Trp	Ala	Ser	Arg	Glu	Leu	Glu	Gly	Phe	Ala	Leu	Asn	Pro
															45
35															

Gly	Leu	Leu	Glu	Thr	Ala	Glu	Gly	Cys	Lys	Gln	Ile	Met	Lys	Gln	Leu
															60
50															

Gln	Pro	Ala	Leu	Gln	Thr	Gly	Thr	Glu	Glu	Leu	Arg	Ser	Leu	Tyr	Asn
															80
65															

Thr	Val	Ala	Thr	Leu	Tyr	Cys	Val	His	Ala	Gly	Ile	Glu	Val	Arg	Asp
															95
85															

Thr	Lys	Glu	Ala	Leu	Asp	Lys	Ile	Glu	Glu	Glu	Gln	Asn	Lys	Ser	Gln
															110
100															

Gln	Lys	Thr	Gln	Gln	Ala	Lys	Glu	Ala	Asp	Gly	Lys	Val	Ser	Gln	Asn
															125
115															

Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Ala Ile
130 135 140

Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu Glu Lys Ala
145 150 155 160

Phe Ser Pro Glu Val Ile Pro Met Phe Thr Ala Leu Ser Glu Gly Ala
165 170 175

Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln
180 185 190

Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala Glu
195 200 205

Trp Asp Arg Leu His Pro Val Gln Ala Gly Pro Val Ala Pro Gly Gln
210 215 220

Met Arg Asp Pro Arg Gly Ser Asp Ile Ala Gly Ala Thr Ser Thr Leu
225 230 235 240

Gln Glu Gln Ile Ala Trp Met Thr Ser Asn Pro Pro Val Pro Val Gly
245 250 255

Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg
260 265 270

Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu
275 280 285

Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu Arg Ala Glu
290 295 300

Gln Ala Thr Gln Asp Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val
305 310 315 320

Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Arg Ala Leu Gly Pro
325 330 335

Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly
340 345 350

Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Ala Asn
355 360 365

Ser Val Asn Ile Met Met Gln Lys Ser Asn Phe Lys Gly Pro Arg Arg
370 375 380

Asn Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Lys Asn
385 390 395 400

Cys Arg Ala Pro Arg Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly
405 410 415

His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys
420 425 430

Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe Leu Gln Asn Arg
435 440 445

Ser Glu Pro Ala Ala Pro Thr Val Pro Thr Ala Pro Pro Ala Glu Ser
450 455 460

Phe Arg Phe Glu Glu Thr Thr Pro Ala Pro Lys Gln Glu Pro Lys Asp
465 470 475 480

Arg Glu Pro Tyr Arg Glu Pro Leu Thr Ala Leu Arg Ser Leu Phe Gly
485 490 495

Ser Gly Pro Leu Ser Gln
500

<210> 23
<211> 849
<212> PRT
<213> Human immunodeficiency virus

<400> 23

Met Arg Val Met Gly Ile Leu Lys Asn Tyr Gln Gln Trp Trp Met Trp
1 5 10 15

Gly Ile Leu Gly Phe Trp Met Leu Ile Ile Ser Ser Val Val Gly Asn
20 25 30

Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Lys

35

40

45

Thr Thr Leu Phe Cys Thr Ser Asp Ala Lys Ala Tyr Glu Thr Glu Val
50 55 60

His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
65 70 75 80

Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
85 90 95

Asn Asp Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
100 105 110

Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu
115 120 125

Lys Cys Arg Asn Val Asn Ala Thr Asn Asn Ile Asn Ser Met Ile Asp
130 135 140

Asn Ser Asn Lys Gly Glu Met Lys Asn Cys Ser Phe Asn Val Thr Thr
145 150 155 160

Glu Leu Arg Asp Arg Lys Gln Glu Val His Ala Leu Phe Tyr Arg Leu
165 170 175

Asp Val Val Pro Leu Gln Gly Asn Asn Ser Asn Glu Tyr Arg Leu Ile
180 185 190

Asn Cys Asn Thr Ser Ala Ile Thr Gln Ala Cys Pro Lys Val Ser Phe
195 200 205

Asp Pro Ile Pro Ile His Tyr Cys Thr Pro Ala Gly Tyr Ala Ile Leu
210 215 220

Lys Cys Asn Asn Gln Thr Phe Asn Gly Thr Gly Pro Cys Asn Asn Val
225 230 235 240

Ser Ser Val Gln Cys Ala His Gly Ile Lys Pro Val Val Ser Thr Gln
245 250 255

Leu Leu Leu Asn Gly Ser Leu Ala Lys Gly Glu Ile Ile Arg Ser
260 265 270

Glu Asn Leu Ala Asn Asn Ala Lys Ile Ile Ile Val Gln Leu Asn Lys
275 280 285

Pro Val Lys Ile Val Cys Val Arg Pro Asn Asn Asn Thr Arg Lys Ser
290 295 300

Val Arg Ile Gly Pro Gly Gln Thr Phe Tyr Ala Thr Gly Glu Ile Ile
305 310 315 320

Gly Asp Ile Arg Gln Ala Tyr Cys Ile Ile Asn Lys Thr Glu Trp Asn
325 330 335

Ser Thr Leu Gln Gly Val Ser Lys Lys Leu Glu Glu His Phe Ser Lys
340 345 350

Lys Ala Ile Lys Phe Glu Pro Ser Ser Gly Gly Asp Leu Glu Ile Thr
355 360 365

Thr His Ser Phe Asn Cys Arg Gly Glu Phe Phe Tyr Cys Asp Thr Ser
370 375 380

Gln Leu Phe Asn Ser Thr Tyr Ser Pro Ser Phe Asn Gly Thr Glu Asn
385 390 395 400

Lys Leu Asn Gly Thr Ile Thr Ile Thr Cys Arg Ile Lys Gln Ile Ile
405 410 415

Asn Met Trp Gln Lys Val Gly Arg Ala Met Tyr Ala Pro Pro Ile Ala
420 425 430

Gly Asn Leu Thr Cys Glu Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg
435 440 445

Asp Gly Gly Lys Thr Gly Pro Asn Asp Thr Glu Ile Phe Arg Pro Gly
450 455 460

Gly Gly Asp Met Arg Asp Asn Trp Arg Asn Glu Leu Tyr Lys Tyr Lys
465 470 475 480

Val Val Glu Ile Lys Pro Leu Gly Val Ala Pro Thr Glu Ala Lys Arg
485 490 495

Arg Val Val Glu Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val Phe
500 505 510

Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser Ile
515 520 525

Thr Leu Thr Val Gln Ala Arg Leu Leu Leu Ser Gly Ile Val Gln Gln
530 535 540

Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Leu Leu Gln
545 550 555 560

Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Thr Arg Ile Leu Ala Val
565 570 575

Glu Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser
580 585 590

Gly Lys Leu Ile Cys Thr Thr Ala Val Pro Trp Asn Ser Ser Trp Ser
595 600 605

Asn Arg Ser His Asp Glu Ile Trp Asp Asn Met Thr Trp Met Gln Trp
610 615 620

Asp Arg Glu Ile Asn Asn Tyr Thr Asp Thr Ile Tyr Arg Leu Leu Glu
625 630 635 640

Glu Ser Gln Asn Gln Glu Lys Asn Glu Lys Asp Leu Leu Ala Leu
645 650 655

Asp Ser Trp Gln Asn Leu Trp Asn Trp Phe Ser Ile Thr Asn Trp Leu
660 665 670

Trp Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu
675 680 685

Arg Ile Ile Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly
690 695 700

Tyr Ser Pro Leu Pro Phe Gln Thr Leu Thr Pro Asn Pro Arg Glu Pro
705 710 715 720

Asp Arg Leu Gly Arg Ile Glu Glu Gly Gly Glu Gln Asp Arg Gly
725 730 735

Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala Leu Ala Trp Asp Asp
740 745 750

Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile
755 760 765

Leu Ile Ala Ala Arg Val Leu Glu Leu Leu Gly Gln Arg Gly Trp Glu
770 775 780

Ala Leu Lys Tyr Leu Gly Ser Leu Val Gln Tyr Trp Gly Leu Glu Leu
785 790 795 800

Lys Lys Ser Ala Ile Ser Leu Leu Asp Thr Ile Ala Ile Ala Val Ala
805 810 815

Glu Gly Thr Asp Arg Ile Ile Glu Phe Ile Gln Arg Ile Cys Arg Ala
820 825 830

Ile Arg Asn Ile Pro Arg Arg Ile Arg Gln Gly Phe Glu Ala Ala Leu
835 840 845

Gln

<210> 24
<211> 855
<212> PRT
<213> Human immunodeficiency virus

<400> 24

Met Arg Val Arg Gly Ile Leu Arg Ser Trp Gln Gln Trp Trp Ile Trp
1 5 . 10 15

Gly Ile Leu Gly Phe Trp Ile Cys Ser Gly Leu Gly Asn Leu Trp Val
20 25 30

Thr Val Tyr Asp Gly Val Pro Val Trp Arg Glu Ala Ser Thr Thr Leu
35 40 45

Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Lys Glu Val His Asn Val
50 55 60

Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln Glu Ile
65 70 75 80

Glu Leu Asp Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn Asp Met
85 90 95

Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln Ser Leu
100 105 110

Lys Pro Arg Val Lys Leu Thr Pro Leu Cys Val Thr Leu Lys Cys Thr
115 120 125

Asn Tyr Ser Thr Asn Tyr Ser Asn Thr Met Asn Ala Thr Ser Tyr Asn
130 135 140

Asn Asn Thr Thr Glu Glu Ile Lys Asn Cys Thr Phe Asn Met Thr Thr
145 150 155 160

Glu Leu Arg Asp Lys Lys Gln Gln Val Tyr Ala Leu Phe Tyr Lys Leu
165 170 175

Asp Ile Val Pro Leu Asn Ser Asn Ser Ser Glu Tyr Arg Leu Ile Asn
180 185 190

Cys Asn Thr Ser Ala Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Asp
195 200 205

Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Tyr Ala Ile Leu Lys
210 215 220

Cys Lys Asn Asn Thr Ser Asn Gly Thr Gly Pro Cys Gln Asn Val Ser
225 230 235 240

Thr Val Gln Cys Thr His Gly Ile Lys Pro Val Val Ser Thr Pro Leu
245 250 255

Leu Leu Asn Gly Ser Leu Ala Glu Gly Gly Glu Ile Ile Ile Arg Ser
260 265 270

Lys Asn Leu Ser Asn Asn Ala Tyr Thr Ile Ile Val His Leu Asn Asp
275 280 285

Ser Val Glu Ile Val Cys Thr Arg Pro Asn Asn Asn Thr Arg Lys Gly
290 295 300

Ile Arg Ile Gly Pro Gly Gln Thr Phe Tyr Ala Thr Glu Asn Ile Ile
305 310 315 320

Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Ala Gly Glu Trp Asn
325 330 335

Lys Ala Val Gln Arg Val Ser Ala Lys Leu Arg Glu His Phe Pro Asn
340 345 350

Lys Thr Ile Glu Phe Gln Pro Ser Ser Gly Gly Asp Leu Glu Ile Thr
355 360 365

Thr His Ser Phe Asn Cys Arg Gly Glu Phe Phe Tyr Cys Asn Thr Ser
370 375 380

Lys Leu Phe Asn Ser Ser Tyr Asn Gly Thr Ser Tyr Arg Gly Thr Glu
385 390 395 400

Ser Asn Ser Ser Ile Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile
405 410 415

Asp Met Trp Gln Lys Val Gly Arg Ala Ile Tyr Ala Pro Pro Ile Glu
420 425 430

Gly Asn Ile Thr Cys Ser Ser Ile Thr Gly Leu Leu Leu Ala Arg
435 440 445

Asp Gly Gly Leu Asp Asn Ile Thr Thr Glu Ile Phe Arg Pro Gln Gly
450 455 460

Gly Asp Met Lys Asp Asn Trp Arg Asn Glu Leu Tyr Lys Tyr Lys Val
465 470 475 480

Val Glu Ile Lys Pro Leu Gly Val Ala Pro Thr Glu Ala Lys Arg Arg
485 490 495

Val Val Glu Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val Ile Phe
500 505 510

Gly Phe Leu Gly Ala Ala Gly Ser Asn Met Gly Ala Ala Ser Ile Thr
515 520 525

Leu Thr Ala Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln
530 535 540

Ser Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Met Leu Gln Leu
545 550 555 560

Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Ile Glu
565 570 575

Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly
580 585 590

Lys Leu Ile Cys Thr Thr Val Pro Trp Asn Ser Ser Trp Ser Asn
595 600 605

Lys Thr Gln Gly Glu Ile Trp Glu Asn Met Thr Trp Met Gln Trp Asp
610 615 620

Lys Glu Ile Ser Asn Tyr Thr Gly Ile Ile Tyr Arg Leu Leu Glu Glu
625 630 635 640

Ser Gln Asn Gln Gln Glu Gln Asn Glu Lys Asp Leu Leu Ala Leu Asp
645 650 655

Ser Arg Asn Asn Leu Trp Ser Trp Phe Asn Ile Ser Asn Trp Leu Trp
660 665 670

Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg
675 680 685

Ile Ile Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly Tyr
690 695 700

Ser Pro Leu Ser Phe Gln Thr Leu Thr Pro Asn Pro Arg Gly Leu Asp
705 710 715 720

Arg Leu Gly Arg Ile Glu Glu Gly Gly Glu Gln Asp Arg Asp Arg
725 730 735

Ser Ile Arg Leu Val Gln Gly Phe Leu Ala Leu Ala Trp Asp Asp Leu

740

745

750

Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Leu Ile Leu
755 760 765

Val Thr Ala Arg Val Val Glu Leu Leu Gly Arg Ser Ser Pro Arg Gly
770 775 780

Leu Gln Arg Gly Trp Glu Ala Leu Lys Tyr Leu Gly Ser Leu Val Gln
785 790 795 800

Tyr Trp Gly Leu Glu Leu Lys Lys Ser Ala Thr Ser Leu Leu Asp Ser
805 810 815

Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile Glu Val Ile
820 825 830

Gln Arg Ile Tyr Arg Ala Phe Cys Asn Ile Pro Arg Arg Val Arg Gln
835 840 845

Gly Phe Glu Ala Ala Leu Gln
850 855

<210> 25

<211> 20

<212> PRT

<213> Human immunodeficiency virus

<400> 25

Asp Ile Lys Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg
1 5 10 15

Phe Phe Lys Thr
20

<210> 26

<211> 60

<212> DNA

<213> Human immunodeficiency virus

<400> 26

gacataaaac aaggacaaa agagccttt agagactatg tagaccgggtt ctttaaaacc 60

<210> 27

<211> 20

<212> PRT

<213> Human immunodeficiency virus

<400> 27

Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg
1 5 10 15

Phe Phe Lys Thr
20

<210> 28

<211> 47

<212> PRT

<213> Human immunodeficiency virus

<400> 28

Thr Ile Thr Ile Thr Cys Arg Ile Lys Gln Ile Ile Asn Met Trp Gln
1 5 10 15

Lys Val Gly Arg Ala Met Tyr Ala Pro Pro Ile Ala Gly Asn Leu Thr
20 25 30

Cys Glu Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg Asp Gly Gly
35 40 45

<210> 29

<211> 48

<212> PRT

<213> Human immunodeficiency virus

<400> 29

Ser Ile Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile Asp Met Trp
1 5 10 15

Gln Lys Val Gly Arg Ala Ile Tyr Ala Pro Pro Ile Glu Gly Asn Ile
20 25 30

Thr Cys Ser Ser Ser Ile Thr Gly Leu Leu Leu Ala Arg Asp Gly Gly
35 40 45

<210> 30

<211> 2469

<212> DNA

<213> Artificial

<220>

<223> PR975 (+)

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cacatcgccc	gcaactgccg	cgcggccgc	aagaaggct	gcttggaaatg	cgcaaggag	180
ggccaccaga	tgaaggactg	caccgagcgc	caggccaaact	tcttccgcga	ggacctggcc	240
ttcccccagg	gcaaggcccc	cgagttcccc	agcgagcaga	accgcgccaa	cagccccacc	300
agccgcgagc	tgcaggtgcg	cggcgacaac	ccccgcagcg	aggccggcgc	cgagcgccag	360
ggcacccctga	acttccccca	gatcaccctg	tggcagcgcc	ccctggtgag	catcaaggtg	420
ggcgccaga	tcaaggaggc	cctgctggac	accggcgccg	acgacaccgt	gctggaggag	480
atgagcctgc	ccggcaagtg	gaagcccaag	atgatcgcg	gcatggcg	cttcatcaag	540
gtgcgccagt	acgaccagat	cctgatcgag	atctgcggca	agaaggccat	cggcaccgtg	600
ctgatcgccc	ccaccccg	gaacatcatc	ggccgcaaca	tgctgacc	gctggctgc	660
accctgaact	tccccatcag	ccccatcgag	accgtgcccc	tgaagctgaa	gcccggcatg	720
gacggcccca	aggtgaagca	gtggccctg	accgaggaga	agatcaaggc	cctgaccgccc	780
atctgcgagg	agatggagaa	ggagggcaag	atcaccaaga	tcggccccc	gaacccctac	840
aacaccccg	tgttcgccc	caagaagaag	gacagcacca	agtggcgca	gctggtggac	900
ttccgcgagc	tgaacaagcg	cacccaggac	ttctggagg	tgcagctgg	catccccac	960
cccgccggcc	tgaagaagaa	gaagagcgtg	accgtgctgg	acgtggcga	cgcctacttc	1020
agcgtcccc	tggacgagga	cttccgcaag	tacaccgcct	tcaccatccc	cagcatcaac	1080
aacgagaccc	ccggcatccg	ctaccagtac	aacgtgctgc	cccaggcgtg	gaagggcagc	1140
cccagcatct	tccagagcag	catgaccaag	atcctggagc	ccttccgcgc	ccgcaacccc	1200
gagatcgtga	tctaccagta	catggacgac	ctgtacgtgg	gcagcgacct	ggagatcg	1260
cagcacccgc	ccaagatcga	ggagctgcgc	aagcacctgc	tgcgctgggg	cttaccacc	1320
cccgacaaga	agcaccagaa	ggagccccc	ttcctgtgga	tggctacga	gctgcacccc	1380
gacaagtgg	ccgtgcagcc	catcgagctg	cccgagaagg	agagctggac	cgtgaacgac	1440
atccagaagc	tggtggccaa	gctgaactgg	gccagccaga	tctacccgg	catcaaggtg	1500
cgcacgtgt	gcaagctgct	gcgcggcgcc	aaggccctga	ccgacatcgt	gcccctgacc	1560
gaggaggccg	agctggagct	ggccgagaac	cgcgagatcc	tgcgcgagcc	cgtgcacggc	1620

gtgtactacg	accccagcaa	ggacctggtg	gccgagatcc	agaagcaggg	ccacgaccag	1680
tggacctacc	agatctacca	ggagcccttc	aagaacctga	agaccggcaa	gtacgccaag	1740
atgcgcaccg	cccacaccaa	cgacgtgaag	cagctgaccg	aggccgtgca	gaagatcgcc	1800
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<400> 49

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<211> 2610
<212> DNA
<213> Artificial

<220>
<223> Type C Envgp160 wild type

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aggattatacg aattggtaca	2580
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<212> DNA
<213> Artificial

<220>
<223> HIV Type C Gag optimized

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agctgcgcag	
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accgtggcca ccctgtactg	300
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<212> DNA
<213> Artificial

<220>
<223> HIV Type C Gag Wild Type

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<210> 53
<211> 60
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Gag Major Homology Region Optimized

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<210> 54
<211> 60
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Gag Major Homology Region Wild Type

<400> 54
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<210> 55
<211> 624
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Nef Optimized

<400> 55

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<210> 56
<211> 624
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Nef Wild Type

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acttataaga	gtgcagttaga	tctcagcttc	ttttaaaag	aaaagggggg	actggaagg	300
ttaatttact	ctaggaaaag	gcaagaaatc	cttgatttgt	gggtctataa	cacacaaggc	360
ttctccctg	attggcaaaa	ctacacatcg	ggccagggg	tccgattccc	actgacctt	420
ggatggtgct	tcaagctagt	accagttgac	ccaagggagg	tgaaagaggc	caatgaagga	480
gaagacaact	gtttgctaca	ccctatgagc	caacatggag	cagaggatga	agatagagaa	540
gtattaaagt	ggaagttga	cagccttcta	gcacacagac	acatggccc	cgagctacat	600
ccggagtatt	acaaaggactg	ctga				624

<210> 57
<211> 624

<212> DNA
 <213> Artificial

 <220>
 <223> HIV Type C NefD125G Optimized

 <400> 57
 atgggcggca agtggagcaa gcgcagcatc gtgggctggc ccgcccgtgcg cgagcgcatg 60
 cgcgcgcaccg agcccgccgc cgagggcgtg ggccgcgcgc gccaggacct ggaccgcac 120
 ggcgcgcctga ccagcagcaa cacccccgccc accaacgagg cctgcgcctg gctgcaggcc 180
 caggaggagg acggcgacgt gggcttcccc gtgcgccttc aggtgcccct gcgcgcctatg 240
 acctacaaga gcgcgcgtgga cctgagcttc ttccctgaagg agaaggggcgg cctggagggc 300
 ctgatctaca gccgcaagcg ccaggagatc ctggacctgt gggtgtacaa cacccaggc 360
 ttcttccccg gctggcagaa ctacaccagc ggcccccggcg tgccgttccc cctgaccttc 420
 ggctggtgct tcaagctggt gcccgtggac ccccgcgagg tgaaggaggc caacgaggc 480
 gaggacaact gcctgctgca ccccatgagc cagcacggcg ccgaggacga ggaccgcgag 540
 gtgctgaagt ggaagttcga cagcctgctg gcccacccgc acatggcccg cgagctgcac 600
 cccgagtaact acaaggactg ctga 624

 <210> 58
 <211> 354
 <212> DNA
 <213> Artificial

 <220>
 <223> HIV Type C p15RNaseH Optimized

 <400> 58
 accttctacg tggacggcgc caccaaccgc gaggccaaga tcggcaaggc cggctacgtg 60
 accgaccgcg gcccgcagaa gatcgtgacc ctgaccaaca ccaccaacca gaagaccgag 120
 ctgcaggcca tccagctggc cctgcaggac agcggcagcg aggtgaacat cgtgaccgac 180
 agccagtacg ccctgggcat catccaggcc cagcccgaca agagcgacag cgagatcttc 240
 aaccagatca tcgagcagct gatcaacaag gagcgcacatc acctgagctg ggtgcccgcc 300
 cacaaggcga tcggcggcaa cgagcaggtg gacaagctgg tgagcaaggg catc 354

 <210> 59
 <211> 354
 <212> DNA
 <213> Artificial

<220>

<223> HIV Type C p15RNaseH Wild Type

<400> 59
actttctatg tagatggagc aactaatagg gaagctaaaa tagaaaaagc agggtatgtt 60
actgacagag gaaggcagaa aattgttact ctaactaaca caacaaatca gaagactgag 120
ttacaagcaa tttagcttagc tctgcaggat tcaggatcg aagtaaacat agtaacagac 180
tcacagtatg catttaggaat cattcaagca caaccagata agagtgactc agagatattt 240
aaccaaataa tagaacagtt aataaacaag gaaagaatct acctgtcatg ggtaccagca 300
cataaaggaa ttggggaaaa tgaacaagta gataaattag taagtaaggg aatt 354

<210> 60

<211> 876

<212> DNA

<213> Artificial

<220>

<223> HIV Type C p31Int Optimized

<400> 60
cgcaagggtgc tgccctgga cggcatcgac aaggcccagg aggagcacga gcgctaccac 60
agcaactggc gcgccatggc caacgagttc aacctgcccc ccacgtggc caaggagatc 120
gtggccagct gcgacaagtgc ccagctgaag ggcgaggcca tccacggca ggtggactgc 180
agccccggca tctggcagct ggactgcacc cacctggagg gcaagatcat cctggtgcc 240
gtgcacgtgg ccagcggcta catggaggcc gaggtgatcc ccgcccggac cggccaggag 300
accgcctact tcacccctgaa gctggccggc cgctggcccg tgaaggtgat ccacaccgac 360
aacggcagca acttcaccag caccggcgta aaggccgcct gctggggc cgccatccag 420
caggagttcg gcatcccta caaccccccag agccaggccg tggggagag catgaacaag 480
gagctgaaga agatcatcg ccaggtgcgc gaccaggccg agcacctgaa gaccggcg 540
cagatggcccg tgccatcca caacttcaag cgcaaggccg gcatggccgg ctacagcgcc 600
ggcgagcgca tcacgcacat catggccacc gacatccaga ccaaggagct gcagaaggcag 660
atcatccgca tccagaactt ccgcgtgtac taccgcgaca gccgcgaccc catctggaag 720
ggcccccggc agctgctgtg gaaggccgag ggcgtgggtgg tgatcgagga caagggccgac 780
atcaagggtgg tgcccccggc caaggccaaatcatccgact actacggccaa gcagatggcc 840
ggcgccgact gcgtggccgg cggccaggac gaggac 876

<210> 61
 <211> 876
 <212> DNA
 <213> Artificial

<220>
 <223> HIV Type C p31Int Wild Type

<400> 61						
aggaaaagtgt	tgtttctaga	tggaatagat	aaagctcaag	aagagcatga	aaggtaaccac	60
agcaattgga	gagcaatggc	taatgagttt	aatctgccac	ccatagtagc	aaaagaaaata	120
gtagctagct	gtgataaaatg	tcaagctaaaaa	gggaaagcca	tacatggaca	agtcgactgt	180
agtccaggga	tatggcaatt	agattgtacc	catttagagg	aaaaaatcat	cctggtagca	240
gtccatgttag	ctagtggcta	catggaagca	gaggttatcc	cagcagaaac	aggacaagaa	300
acagcatatt	ttatattaaa	attagcagga	agatggccag	tcaaagtaat	acatacagac	360
aatggcagta	attttaccag	tactgcagtt	aaggcagcct	gttgggtggc	aggtatccaa	420
caggaatttg	gaattcccta	caatccccaa	agtcagggag	tggtagaatc	catgaataaa	480
gaattaaaga	aaataatagg	acaagtaaga	gatcaagctg	agcaccttaa	gacagcagta	540
caaatggcag	tattcattca	caattttaaa	agaaaagggg	gaattggggg	gtacagtgca	600
ggggaaagaa	taatagacat	aatagcaaca	gacatacaaa	ctaaagaatt	acaaaaacaa	660
attataagaa	ttcaaaattt	tcgggtttat	tacagagaca	gcagagaccc	tattggaaa	720
ggaccagccg	aactactctg	gaaaggtgaa	gggtagtag	taatagaaga	taaaggtgac	780
ataaaggtag	taccaaggag	gaaagcaaaa	atcattagag	attatggaaa	acagatggca	840
ggtgctgatt	gtgtggcagg	tggacaggat	gaagat			876

<210> 62
 <211> 3015
 <212> DNA
 <213> Artificial

<220>
 <223> HIV Type C Pol Optimized

<400> 62						
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acccgcgcca	acagccccac	cagccgcacc	aacagcccc	ccagccgcga	gctgcaggtg	120
cgccggcgaca	accccccgcgc	cgaggagggc	gagcgcgagg	gcaccttcaa	cttccccag	180
atcaccctgt	ggcagcgc	cctggtgagc	atcaaggtgg	agggccagat	caaggaggcc	240

ctgctggaca ccggcgccga cgacaccgtg ctggaggaga tcgacctgcc cggcaagtgg	300
aagcccaaga tgatcggcg catcgccgc ttcatcaagg tgcgccagta cgaccagatc	360
ctgatcgaga tctgcggcaa gaaggccatc ggcaccgtgc tgggtggccc cacccccgtg	420
aacatcatcg gccgcaacct gctgaccagg ctgggctgca ccctgaactt ccccatcagc	480
cccatcgaga ccgtgcccgt gaagctgaag cccggcatgg acggcccaa ggtgaagcag	540
tggccctga ccgaggagaa gatcaaggcc ctgaccgcca tctgcgagga gatggagaag	600
gagggcaaga tcaccaagat cggcccccac aaccctaca acacccctgt gttgccatc	660
aagaagaagg acagcaccaa gtggcgcaag ctggtgact tccgcgagct gaacaagcgc	720
acccaggact tctgggaggt gcagctggc atccccacc cgcggccct gaagaagaag	780
aagagcgtga ccgtgctgga cgtggcgac gcctacttca gcgtgcccggc ggacgagagc	840
ttccgcaagt acaccgcctt caccatcccc agcatcaaca acgagacccc cggcatccgc	900
taccagtaca acgtgctgcc ccagggctgg aagggcagcc cgcgcattt ccagagcagc	960
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atggacgacc tgtacgtgg cagcgacctg gagatcgcc acgaccgcgc caagatcgag	1080
gagctgcgcg agcacctgct gaagtggggc ttcaccaccc cgcacaagaa gcaccagaag	1140
gagcccccct tcctgtggat gggctacgag ctgcaccccg acaagtggac cgtcagccc	1200
atcctgctgc ccgagaagga cagctggacc gtgaacgaca tccagaagct ggtggcaag	1260
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gccgagaacc gcgagatcct gcgcgagccc gtgcacggcg tgtactacga ccccagcaag	1440
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gagcccttca agaacctgaa gaccggcaag tacgccaaga tgcgcaccac ccacaccaac	1560
gacgtgaagc agctgaccga ggcgtgcag aagatcgcca tggagagcat cgtatctgg	1620
ggcaagaccc ccaagttccg cctgcccattc cagaaggaga cctggagac ctgggtggacc	1680
gactactggc aggccacctg gatccccgag tggagttcg tgaacacccc cccctgggt	1740
aagctgttgtt accagctgga gaaggacccc atcgccggcg tggagacctt ctacgtggac	1800
ggcgccacca accgcgaggc caagatcgcc aaggccggct acgtgaccga cgcggccgc	1860
cagaagatcg tgaccctgac caacaccacc aaccagaaga ccgagctgca ggccatccag	1920
ctggccctgc aggacagcgg cagcgaggtg aacatcgta ccgacagcga gtacgcccgt	1980

ggcatcatcc	aggcccagcc	cgacaagagc	gacagcgaga	tcttcaacca	gatcatcgag	2040
cagctgatca	acaaggagcg	catctacctg	agctgggtgc	ccgcccacaa	gggcatcgac	2100
ggcaacgagc	aggtggacaa	gctggtgagc	aagggcattcc	gcaaggtgct	gttcctggac	2160
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aacgagttca	acctgcccc	catcgtggcc	aaggagatcg	tggccagctg	cgacaagtgc	2280
cagctgaagg	gcgaggccat	ccacggccag	gtggactgca	gccccggcat	ctggcagctg	2340
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accggcgtga	aggccgcctg	ctggtgccgc	ggcatccagc	aggagttcgg	catcccctac	2580
aacccccaga	gccagggcgt	ggtggagagc	atgaacaagg	agctgaagaa	gatcatcgcc	2640
caggtgcgcg	accaggccga	gcacctaag	accgcgtgc	agatggccgt	gttcatccac	2700
aacttcaagc	gcaaggccgg	catggcgcc	tacagcgccg	gcgagcgcata	catcgacatc	2760
atcgccaccc	acatccagac	caaggagctg	cagaagcaga	tcatccgcata	ccagaacttc	2820
cgcgtgtact	accgcgacag	ccgcgcaccc	atcttggagg	gccccggcga	gctgctgtgg	2880
aaggcgagg	gcgtgggtgt	gatcgaggac	aaggcgaca	tcaaggtgg	gccccggccgc	2940
aaggccaaga	tcatccgcga	ctacggcaag	cagatggccg	gcccgcactg	cgtggccggc	3000
ggccaggacg	aggac					3015

<210> 63
<211> 3015
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Pol Wild Type

<400> 63						
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accagagcca	acagccccac	cagcagaacc	aacagcccc	ccagcagaga	gttcaggtt	120
cgaggagaca	accccccgtgc	cgaggaagga	gaaagagagg	gaacctttaa	cttccctcaa	180
atcaactttt	ggcagcgcacc	ccttgtctca	ataaaagtag	agggccagat	aaaggaggct	240
ctcttagaca	caggagcaga	tgatacagta	ttagaagaaa	tagatttgcc	agggaaatgg	300

aaacccaaaaa tgataggggg aattggaggt tttatcaaag taagacagta tgatcaaata	360
cttataaaaaa tttgtggaaa aaaggctata ggtacagtat tagtagggcc tacaccagtc	420
aacataattg gaagaaatct gttaactcag cttggatgca cactaaattt tccaattagt	480
cctattgaaa ctgtaccagt aaaattaaaa ccaggaatgg atggcccaa ggtcaaacaa	540
tggccattga cagaagaaaa aataaaagca ttaacagcaa tttgtgagga aatggagaag	600
gaaggaaaaaa ttacaaaaat tgggcctgat aatccatata acactccagt atttgcata	660
aaaaagaagg acagtactaa gtggagaaaa ttagtagatt tcagggact caataaaaga	720
actcaagact tttgggaagt tcaatttagga ataccacacc cagcaggatt aaaaaagaaa	780
aaatcagtga cagtgcaga tgtggggat gcataaaaa cagttcctt agatgaaagc	840
ttcagggaaat atactgcatt caccataacct agtataaaca atgaaacacc agggattaga	900
tatcaatata atgtgctgcc acagggatgg aaaggatcac cagcaatatt ccagagtagc	960
atgacaaaaaa tcttagagcc cttagagca aaaaatccag acatagttat ctatcaatat	1020
atggatgact tgtatgttagg atctgactta gaaatgggc aacatagagc aaaaatagaa	1080
gagttaggg aacatttatt gaaatggga tttacaacac cagacaagaa acataaaaaa	1140
gaacccccat ttctttggat ggggtatgaa ctccatcctg acaaattggac agtacaacct	1200
atactgctgc cagaaaaagga tagttggact gtcaatgata tacagaagtt agtggaaaaa	1260
ttaaactggg caagtcagat ttacccaggg attaaagtaa ggcaactctg taaactcctc	1320
aggggggcca aagcactaac agacatagta ccactaactg aagaagcaga attagaattg	1380
gcagagaaca gggaaatttt aagagaacca gtacatggag tatattatga tccatcaaaa	1440
gacttgatag ctgaaataca gaaacagggg catgaacaat ggacatatca aatttatcaa	1500
gaaccattta aaaatctgaa aacagggaaag tatgaaaaaa tgaggactac ccacactaat	1560
gatgtaaaac agttaacaga ggcagtgc当地 aaaaatagcca tggaaagcat agtaatatgg	1620
ggaaagactc ctaaatttag actacccatc caaaaagaaa catggagac atggggaca	1680
gactattggc aagccacctg gatccctgag tggagttt ttaatacccc tcccctagta	1740
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ggagcaacta atagggaaagc taaaatagga aaagcagggt atgttactga cagaggaagg	1860
cagaaaaattg ttactctaact taacacaaca aatcagaaga ctgagttaca agcaattcag	1920
ctagctctgc aggattcagg atcagaagta aacatagtaa cagactcaca gtatgcatta	1980
ggaatcattc aagcacaacc agataagagt gactcagaga tatttaacca aataatagaa	2040

cagttataaa	acaaggaaag	aatctacctg	tcatgggtac	cagcacataa	aggaattggg	2100
ggaaatgaac	aagtataaa	attagtaagt	aaggaaatta	ggaaaagtgtt	gtttcttagat	2160
ggaatagata	aagctcaaga	agagcatgaa	aggtaccaca	gcaattggag	agcaatggct	2220
aatgagtttta	atctgccacc	catagtagca	aaagaaatag	tagctagctg	tgataaatgt	2280
cagctaaaag	gggaagccat	acatggacaa	gtcgactgta	gtccaggat	atggcaatta	2340
gattgtaccc	atttagaggg	aaaaatcatc	ctggtagcag	tccatgtgc	tagtggtac	2400
atggaagcag	aggttatccc	agcagaaaca	ggacaagaaa	cagcatattt	tatattaaaa	2460
ttagcagaa	gatggccagt	caaagtaata	catacagaca	atggcagtaa	ttttaccagt	2520
actgcagtttta	aggcagcctg	ttgggtggca	ggtatccaac	aggaatttg	aattccctac	2580
aatccccaaa	gtcagggagt	ggtagaatcc	atgaaataag	aattaaagaa	aataatagga	2640
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aattttaaaa	gaaaaggggg	aattgggggg	tacagtgcag	gggaaagaat	aatagacata	2760
atagcaacag	acatacaaac	taaagaatta	caaaaacaaa	ttataagaat	tcaaaatttt	2820
cgggtttatt	acagagacag	cagagaccct	atttgaaag	gaccagccga	actactctgg	2880
aaaggtgaag	gggttagtagt	aatagaagat	aaaggtgaca	taaaggttagt	accaaggagg	2940
aaagcaaaaa	tcattagaga	ttatggaaaa	cagatggcag	gtgctgattt	tgtggcaggt	3000
ggacaggatg	aagat					3015

<210> 64
<211> 297
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Protease Optimized

<400> 64	ccccagatca	ccctgtggca	gcgcggccctg	gtgagcatca	aggtggaggg	ccagatcaag	60
	gaggccctgc	tggacaccgg	cggcgacgac	accgtgctgg	aggagatcga	cctgcccggc	120
	aagtggaaagc	ccaagatgat	cggcggcattc	tcaagggtcg	ccagtacgac		180
	cagatcctga	tcgagatctg	cggcaagaag	gccatggca	ccgtgcttgt	gggccccacc	240
	cccgtaaca	tcatcgcccg	caacctgctg	accctgctgg	gctgcaccct	gaacttc	297

<210> 65

<211> 297
 <212> DNA
 <213> Artificial

<220>
 <223> HIV Type C Protease Wild Type

<400> 65
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 gaggctctct tagacacagg agcagatgat acagtattag aagaaataga tttgccaggg 120
 aaatggaaac caaaaatgtat agggggaaatt ggaggtttta tcaaagtaag acagtatgtat 180
 caaataactta tagaaatttt tgaaaaaaag gctataggta cagtattagt agggcctaca 240
 ccagtcaaca taatttggaaag aaatctgtta actcagcttg gatgcacact aaatttt 297

<210> 66
 <211> 297
 <212> DNA
 <213> Artificial

<220>
 <223> HIV Type C Inactivated Protease Optimized

<400> 66
 ccccagatca ccctgtggca gcgcacccctg gtgagcatca aggtggaggg ccagatcaag 60
 gagggccctgc tggccaccgg cgccgcacgac accgtgctgg aggagatcga cctgcccggc 120
 aagtggaaagc ccaagatgat cggcgccatc ggcggcttca tcaagggtgcg ccagtacgac 180
 cagatcctga tcgagatctg cggcaagaag gccatggca ccgtgctggt gggccccacc 240
 cccgtgaaca tcatcgcccg caacctgctg acccagctgg gctgcaccct gaacctc 297

<210> 67
 <211> 297
 <212> DNA
 <213> Artificial

<220>
 <223> HIV Type C Inactivated Protease Wild Type

<400> 67
 cctcaaatac ctctttggca gcgcacccctt gtctcaataa aagttagaggg ccagataaaag 60
 gaggctctct tagccacagg agcagatgat acagtattag aagaaataga tttgccaggg 120
 aaatggaaac caaaaatgtat agggggaaatt ggaggtttta tcaaagtaag acagtatgtat 180
 caaataactta tagaaatttt tgaaaaaaag gctataggta cagtattagt agggcctaca 240
 ccagtcaaca taatttggaaag aaatctgtta actcagcttg gatgcacact aaatttt 297

<210> 68
 <211> 1965
 <212> DNA
 <213> Artificial

<220>
 <223> HIV Type C Inactivated Protease Mutated Reverse Transcriptase Optimized

<400>	68					
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gaggcccctgc	tggccaccgg	cggccgacgac	accgtgctgg	aggagatcga	cctgcccggc	120
aagtggaaac	ccaagatgat	cggcggcattc	ggcggcttca	tcaaggtgcg	ccagtgacgac	180
cagatcctga	tcgagatctg	cggcaagaag	gccatcggca	ccgtgctgg	gggccccacc	240
cccgtaaca	tcatcggccg	caacctgctg	accctgg	gctgcaccct	gaacttcccc	300
atcagcccc	tcgagaccgt	gcccgtgaag	ctgaagcccg	gcatggacgg	ccccaaagggt	360
aagcagtggc	ccctgaccga	ggagaagatc	aaggccctga	ccgccatctg	cgaggagatg	420
gagaaggagg	gcaagatcac	caagatcggc	cccgacaacc	cctacaacac	ccccgtgttc	480
gccatcaaga	agaaggacag	caccaagtgg	cgcaagctgg	tggacttccg	cgagctgaac	540
aagcgcaccc	aggacttctg	ggaggtgcag	ctgggcattcc	cccaccccg	cggcctgtgg	600
aagaagaaga	gcgtgaccgt	gctggacgtg	ggcgacgcct	acttcagcgt	gcccctggac	660
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tgggccagcc	agatctaccc	cggcatcaag	gtgcgccagc	tgtgcaagct	gctgcgcggc	1140
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aaccgcgaga	tcctgcgcga	gcccgtgcac	ggcgtgtact	acgaccccg	caaggacctg	1260
atcgccgaga	tccagaagca	gggccacgag	cagtggacct	accagatcta	ccaggagccc	1320
ttcaagaacc	tgaagaccgg	caagtacgccc	aagatgcgc	ccacccacac	caacgcacgt	1380

aagcagctga	ccgaggccgt	gcagaagatc	gccatggaga	gcatcgtgat	ctggggcaag	1440
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tggcaggcca	cctggatccc	cgagtggag	ttcgtgaaca	ccccccccc	ggtgaagctg	1560
tggtaccagc	tggagaagga	ccccatcgcc	ggcgtggaga	ccttctacgt	ggacggcgcc	1620
accaaccgcg	aggccaagat	cggaaggcc	ggctacgtga	ccgaccgcgg	ccgcccagaag	1680
atcgtagcccc	tgaccaacac	caccaaccag	aagaccgagc	tgcaggccat	ccagctggcc	1740
ctgcaggaca	gcggcagcga	ggtgaacatc	gtgaccgaca	gccagtacgc	cctgggcattc	1800
atccaggccc	agcccgacaa	gagcgacagc	gagatttca	accagatcat	cgagcagctg	1860
atcaacaagg	agcgcatcta	cctgagctgg	gtgcccggccc	acaagggcat	cgccggcaac	1920
gagcaggtgg	acaagctggt	gagcaagggc	atccgcaagg	tgctg		1965

<210> 69
<211> 1965
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Inactivated Protease Mutated Reverse Transcriptase Wild Type

<400> 69						
cctcaaatac	ctctttggca	gcgaccctt	gtctcaataa	aagttagaggg	ccagataaag	60
gaggctctct	tagccacagg	agcagatgat	acagtattag	aagaaataga	tttgcaggg	120
aaatggaaac	caaaaatgtat	agggggaaatt	ggaggtttta	tcaaagtaag	acagtatgat	180
caaatactta	tagaaatttg	tggaaaaaaag	gctataggta	cagtattag	agggcctaca	240
ccagtcaaca	taatttggaaag	aatctgtta	actcagcttgc	gatgcacact	aaattttcca	300
attagtccta	ttgaaaactgt	accagtaaaa	ttaaaaaccag	aatggatgg	cccaaagggtc	360
aaacaatggc	cattgacaga	agaaaaaaata	aaagcattaa	cagcaatttg	tgaggaaatg	420
gagaaggaag	gaaaaattac	aaaaattggg	cctgataatc	catataacac	tccagtattt	480
gccataaaaa	agaaggacag	tactaagtgg	agaaaattag	tagatttcag	ggaactcaat	540
aaaagaactc	aagacttttgc	ggaagttcaa	ttaggaatac	cacacccagc	aggattaaaa	600
aagaaaaat	cagtgcacagt	gctagatgtg	ggggatgcat	attttcagt	tccttttagat	660
gaaagcttca	ggaatatac	tgcattcacc	atacctagta	taaacaatga	aacaccaggg	720
attagatatc	aatataatgt	gctgccacag	ggatggaaag	gatcaccagc	aatattccag	780

agtagcatga caaaaatctt agagcccttc agagaaaaaa atccagacat agttatctat	840
caagccccgt tgtatgttagg atctgactta gaaataggc aacatagagc aaaaatagaa	900
gagtttaaggg aacatttatt gaaatgggg tttacaacac cagacaagaa acataaaaaa	960
gaaccccccatttcttcccat cgaactccat cctgacaaat ggacagtaca acctatactg	1020
ctgccagaaa aggatagttg gactgtcaat gatatacaga agttagtggg aaaattaaac	1080
tggccaagtc agatttaccc agggattaaa gtaaggcaac tctgtaaact cctcaggggg	1140
gccaaagcac taacagacat agtaccacta actgaagaag cagaattaga attggcagag	1200
aacagggaaa tttaagaga accagtacat ggagtatatt atgatccatc aaaagacttg	1260
atagctgaaa tacagaaaca ggggcatgaa caatggacat atcaaattta tcaagaacca	1320
tttaaaaatc tgaaaacagg gaagtatgca aaaatgagga ctacccacac taatgatgta	1380
aaacagttaa cagaggcagt gcaaaaaata gccatggaaa gcatacgtaat atggggaaag	1440
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tggcaagcca cctggatccc tgagtggag tttgttaata cccctccct agtaaaatta	1560
tggtaccaac tagaaaaaga tcccatagca ggagtagaaa ctttctatgt agatggagca	1620
actaataggg aagctaaaat aggaaaagca gggtatgtt ctgacagagg aaggcagaaa	1680
attgttactc taactaacac aacaaatcag aagactgagt tacaagcaat tcagctagct	1740
ctgcaggatt caggatcaga agtaaacata gtaacagact cacagtatgc attaggaatc	1800
attcaagcac aaccagataa gagtgactca gagatattta accaaataat agaacagtta	1860
ataaacaagg aaagaatcta cctgtcatgg gtaccagcac ataaaggaat tggggaaat	1920
gaacaagtag ataaattagt aagtaaggaa attagggaaag tgttg	1965

<210> 70
<211> 1977
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Protease and Reverse Transcriptase Optimized

<400> 70 ccccagatca ccctgtggca gcgcggccctg gtgagcatca aggtggaggg ccagatcaag	60
gaggccctgc tggacaccgg cgccgcacgac accgtgctgg aggagatcga cctgcccggc	120
aagtggaaagc ccaagatgat cggcggcattc ggcggcttca tcaaggtgcg ccagtacgac	180

cagatcctga tcgagatctg cggcaagaag gccatcgca ccgtgctggt gggccccacc	240
cccgtaaca tcatcgccg caacctgctg acccagctgg gctgcaccct gaacttcccc	300
atcagccccca tcgagaccgt gcccgtgaag ctgaagcccg gcatggacgg ccccaagggtg	360
aagcagtggc ccctgaccga ggagaagatc aaggccctga cgcgcatttg cgaggagatg	420
gagaaggagg gcaagatcac caagatcgcc cccgacaacc cttacaacac cccctgtttc	480
gccatcaaga agaaggacag caccaagtgg cgcaagctgg tggacttccg cgagctgaac	540
aagcgcaccc aggacttctg ggaggtgcag ctggcatcc cccaccccgcc cggctgtgg	600
aagaagaaga gcgtgaccgt gctggacgtg ggcgacgcct acttcagcgt gcccctggac	660
gagagcttcc gcaagtacac cgccttcacc atccccagca tcaacaacga gaccccccggc	720
atccgctacc agtacaacgt gctgccccag ggcttggagg gcagcccgcc catcttccag	780
agcagcatga ccaagatcct ggagcccttc cgcgccaaga accccgacat cgtatctac	840
cagtacatgg acgacctgtt cgtggcagc gacctggaga tcggccagca ccgcgccaag	900
atcgaggagc tgcgcgagca cctgctgttca tggggcttca ccaccccgaa caagaaggac	960
cagaaggagc ccccttcct gtggatgggc tacgagctgc accccgacaa gtggaccgtg	1020
cagcccatcc tgctgcccga gaaggacagc tggaccgtga acgacatcca gaagctggtg	1080
ggcaagctga actggggccag ccagatctac cccggcatca aggtgcgcca gctgtgcaag	1140
ctgctgcgca ggcgccaaggc cctgaccgac atcgtgcccc tgaccgagga ggccgagctg	1200
gagctggccg agaaccgcga gatcctgcgc gagccctgtc acggcgtgtt ctacgacccc	1260
agcaaggacc tgatcgccga gatccagaag cagggccacg agcagtggac ctaccagatc	1320
taccaggagc cttcaagaa cctgaagacc ggcaagtacg ccaagatcg caccacccac	1380
accaacgacg tgaagcagct gaccgaggcc gtgcagaaga tcgccatgga gagcatcgtg	1440
atctggggca agaccccaa gttccgcctg cccatccaga aggagacctg ggagacctgg	1500
tggaccgact actggcaggc cacctggatc cccgagtggg agttcgtgaa caccctccccc	1560
ctggtaagc tgtggtacca gctggagaag gacccatcg ccggcgtgga gacccatctac	1620
gtggacggcg ccaccaaccg cgaggccaaatcggcaagg ccggctacgt gaccgaccgc	1680
ggccgcccaga agatcgtgac cctgaccaac accaccaacc agaagaccga gctgcaggcc	1740
atccagctgg ccctgcagga cagcggcagc gaggtgaaca tcgtgaccga cagccagtac	1800
gcctggca tcatccaggc ccagcccgac aagagcgaca gcgagatctt caaccagatc	1860
atcgagcagc tgatcaacaa ggagcgcatc tacctgagct gggtgccccgc ccacaaggc	1920

atcggcggca acgagcagg ggacaagctg gtgagcaagg gcatccgcaa ggtgctg 1977

<210> 71
<211> 1977
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Protease and Reverse Transcriptase Wild Type

<400> 71
cctcaaatca ctcttggca gcgcacccctt gtctcaataa aagttagaggg ccagataaaag 60
gaggctctct tagacacagg agcagatgat acagtattag aagaaataga tttgccaggg 120
aaatggaaac caaaaatgtat agggggaaatt ggaggtttta tcaaagtaag acagtatgtat 180
caaatactta tagaaatttt tgaaaaaaag gctataggta cagtattagt agggcctaca 240
ccagtcaaca taatttgaag aaatctgtta actcagcttg gatgcacact aaattttcca 300
attagtccta ttgaaaactgt accagtaaaa ttaaaaccag gaatggatgg cccaaaggc 360
aaacaatggc cattgacaga agaaaaaaata aaagcattaa cagcaatttg tgaggaaatg 420
gagaaggaag gaaaaattac aaaaatttggg cctgataatc catataacac tccagtattt 480
gccataaaaaa agaaggacag tactaagtgg agaaaattag tagatttcag ggaactcaat 540
aaaagaactc aagacttttgg ggaagttcaa ttaggaatac cacacccagc aggattaaaa 600
aagaaaaaat cagtgacagt gctagatgtg ggggatgcat atttttcagt tccttttagat 660
gaaagcttca ggaaatatac tgcattcacc ataccttagta taaacaatga aacaccaggg 720
attagatatc aatataatgt gctgccacag ggtggaaag gatcaccagc aatattccag 780
agtagcatga caaaaatctt agagcccttc agagcaaaaa atccagacat agttatctat 840
caatatatgg atgacttgta tgttaggatct gacttagaaa tagggcaaca tagagcaaaa 900
atagaagagt taagggaca tttattgaaa tggggattta caacaccaga caagaaacat 960
caaaaagaac ccccatttct ttggatgggg tatgaactcc atcctgacaa atggacagta 1020
caacctatac tgctgccaga aaaggatagt tggactgtca atgatataaca gaagtttagtg 1080
ggaaaattaa actggcaag tcagattac ccaggattta aagtaaggca actctgtaaa 1140
ctcctcaggg gggccaaagc actaacagac atagtaccac taactgaaga agcagaattta 1200
gaattggcag agaacaggga aattttaaaga gaaccagtac atggagtata ttatgatcca 1260
tcaaaagact tgatagctga aatacagaaaa cagggcatg aacaatggac atatcaaatt 1320

tatcaagaac cattaaaaaa tctgaaaaca ggaaagtatg caaaaatgag gactaccac	1380
actaatgatg taaaacagtt aacagaggca gtgaaaaaaaa tagccatgga aagcatagta	1440
atatgggaa agactcctaa atttagacta cccatccaaa aagaaacatg ggagacatgg	1500
tggacagact attggcaagc cacctggatc cctgagtggg agtttgttaa taccctccc	1560
ctagtaaaat tatggtacca actagaaaaaa gatccatag caggagtaga aacttttat	1620
gtagatggag caactaatacg ggaagctaaa atagaaaaag cagggatgt tactgacaga	1680
ggaaggcaga aaattttac tctaactaac acaacaaatc agaagactga gttacaagca	1740
attcagctag ctctgcagga ttcaaggatca gaagtaaaca tagtaacaga ctcacagtat	1800
gcattaggaa tcattcaagc acaaccagat aagagtact cagagatatt taaccaaata	1860
atagaacagt taataaacaat gaaagaatc tacctgtcat ggttaccagc acataaagga	1920
attggggaa atgaacaagt agataaaatta gtaagtaagg gaatttagaa agtggtg	1977

<210> 72
<211> 75
<212> DNA
<213> Artificial

<220>
<223> HIV Type C RevExon1 Optimized

<400> 72 atggccggcc gcagcggcga cagcgacgag gccctgctgc aggtggtaaa gatcatcaag	60
atcctgtacc agagc	75

<210> 73
<211> 76
<212> DNA
<213> Artificial

<220>
<223> HIV Type C RevExon1 Wild Type

<400> 73 atggcaggaa gaagcggaga cagcgacgaa gcgcctcc aagtggtaaa gatcatcaaa	60
atcctctatc aaagca	76

<210> 74
<211> 246
<212> DNA
<213> Artificial

<220>

<223> HIV Type C RevExon2 Optimized

<400> 74
ccctacccca agcccgaggg cacccgccag gcccggcgca accgcccggc ccgctggcgc 60
gccccggcagc gccagatcca caccatggc gagcgcatcc tggtggcctg cctggggccgc 120
agcgccgagc ccgtgcccct gcagctgccc cccctggagc gcctgcacat caactgcagc 180
gagggcagcg gcaccagcg cacccagcag agccaggca ccaccgaggg cgtgggcgac 240
ccctaa 246

<210> 75
<211> 248
<212> DNA
<213> Artificial

<220>
<223> HIV Type C RevExon2 Wild Type

<400> 75
acccttaccc caagcccgag gggactcgac aggctcggag gaatcgaaga agaagggtgga 60
gagcaagaca gagacagatc catacgattt gtgagcggat tcttgtcgct tgcctggac 120
gatctgcgga gcctgtgcct cttagctac caccgcttga gagacttcat attaattgca 180
gtgagggcag tggaacttct gggcacacagc agtctcaggg gactacagag ggggtgggag 240
atccttaa 248

<210> 76
<211> 1680
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Reverse Transcriptase Optimized

<400> 76
ccatcgagcc ccatcgagac cgtgcccgtg aagctgaagc ccggcatgga cggccccaaag 60
gtgaaggagt ggccccgtac cgaggagaag atcaaggccc tgaccgccat ctgcgaggag 120
atggagaagg agggcaagat caccaagatc ggccccgaca acccctacaa caccggcgtg 180
ttcgccatca agaagaagga cagcaccaag tggcgaagc tggtgactt ccgcgagctg 240
aacaagcgca cccaggactt ctgggagggtg cagctggca tcccccaccc cgccggcctg 300
aagaagaaga agagcgtgac cgtgctggac gtggcgacg cctacttcag cgtggccctg 360
gacgagagct tccgcaagta caccgccttc accatccccca gcatcaacaa cgagaccccc 420

ggcatccgct accagtacaa cgtgctgccc cagggctgga agggcagccc cgccatttc	480
cagagcagca tgaccaagat cctggagccc ttccgcgcca agaaccggca catcgatc	540
taccagtaca tggacgacct gtacgtggc agcgacctgg agatcgccca gcaccgcgccc	600
aagatcgagg agctgcgcga gcacctgctg aagtgggct tcaccacccc cgacaagaag	660
caccagaagg agccccctt cctgtggatg ggctacgagc tgcaccccgaa caagtggacc	720
gtgcagccca tcctgctgcc cgagaaggac agctggaccg tgaacgacat ccagaagctg	780
gtggcaagc tgaactggc cagccagatc taccggca tcaagggtcgccagctgtgc	840
aagctgctgc gcggcgccaa ggccctgacc gacatcgatc ccctgaccga ggaggccgag	900
ctggagctgg ccgagaaccg cgagatcctg cgcgagcccg tgcacggcgt gtactacgac	960
cccagcaagg acctgatcgc cgagatccag aagcagggcc acgagcagtg gacattaccag	1020
atctaccagg agcccttcaa gaacctgaag accggcaagt acgccaagat gcgcaccacc	1080
cacaccaacg acgtgaagca gctgaccgag gccgtgcaga agatcgccat ggagagcatc	1140
gtgatctggg gcaagacccc caagttccgc ctgcccattcc agaaggagac ctggagacc	1200
tggtgaccg actactggca ggccacctgg atcccgagt gggagttcgt gaacacccccc	1260
ccctggta agctgtggta ccagctggag aaggacccca tcgcccggcgt ggagaccc	1320
tacgtggacg gcgcacccaa ccgcgaggcc aagatcgca aggccggcta cgtgaccgac	1380
cgcggccgccc agaagatcgt gaccctgacc aacaccacca accagaagac cgagctgcag	1440
gccatccagc tggccctgca ggacagcggc agcgaggtga acatcgatc cgacagccag	1500
tacgcccggta gcatcatcca ggcccagccc gacaagagcg acagcgagat cttcaaccag	1560
atcatcgagc agctgatcaa caaggagcgc atctacctga gctgggtgcc cgccacaaag	1620
ggcatcggcg gcaacgagca ggtggacaag ctggtagca agggcatccg caaggtgctg	1680

<210> 77
<211> 1680
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Reverse Transcriptase Wild Type

<400> 77 ccaatttagtc ctattgaaac tgttaccagta aaattaaaac caggaatggta tggcccaaag	60
gtcaaacaat ggccattgac agaagaaaaaa ataaaagcat taacagcaat ttgtgaggaa	120
atggagaagg aaggaaaaat tacaaaaatt gggcctgata atccatataa cactccagta	180

tttgcataa	aaaagaagga	cagtactaag	tggagaaaaat	tagtagattt	caggaaactc	240
aataaaagaa	ctcaagactt	ttgggaagtt	caattaggaa	taccacaccc	agcaggatta	300
aaaaagaaaa	aatcagtgac	agtgcgtat	gtggggatg	catattttc	agttccttta	360
gatgaaagct	tcaagaaata	tactgcattc	accataccta	gtataaaca	tgaaacacca	420
gggattagat	atcaatataa	tgtgctgcc	cagggatgga	aaggatcacc	agcaatattc	480
cagagtagca	tgacaaaaat	cttagagccc	ttcagagcaa	aaaatccaga	catagttatc	540
tatcaatata	tggatgactt	gtatgttag	tctgacttag	aaataggca	acatagagca	600
aaaatagaag	agttaaggga	acatttattt	aatggggat	ttacaacacc	agacaagaaa	660
catcaaaaag	aaccccccatt	tcttggatg	gggttatgaac	tccatcctga	caaatggaca	720
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gtggaaaaat	taaactgggc	aagtcagatt	tacccaggga	ttaaagtaag	gcaactctgt	840
aaactcctca	ggggggccaa	agcactaaca	gacatagtac	cactaactga	agaagcagaa	900
ttagaattgg	cagagaacag	ggaaatttta	agagaaccag	tacatggagt	atattatgt	960
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atttatcaag	aaccatttaa	aaatctgaaa	acagggaaat	atgcaaaaat	gaggactacc	1080
cacactaatg	atgtaaaaca	gttaacagag	gcagtgc	aaatagccat	ggaaagcata	1140
gtaatatgg	gaaagactcc	taaatttga	ctaccatcc	aaaaagaaac	atgggagaca	1200
tggtggacag	actattggca	agccacctgg	atccctgagt	gggagttgt	taataccct	1260
cccctagtaa	aattatggta	ccaactagaa	aaagatccc	tagcaggagt	agaaactttc	1320
tatgtatgt	gagcaactaa	tagggaaat	aaaataggaa	aagcaggta	tgttactgac	1380
agaggaaggc	agaaaattgt	tactctaact	aacacaacaa	atcagaagac	tgagttacaa	1440
gcaattcagc	tagctctgca	ggattcagga	tcagaagtaa	acatagtaac	agactcacag	1500
tatgcattag	gaatcattca	agcacaacca	gataagagtg	actcagagat	atthaaccaa	1560
ataatagaac	agttaataaa	caaggaaaga	atctacctgt	catgggtacc	agcacataaa	1620
ggaattgggg	gaaatgaaca	agtagataaa	ttagtaagta	aggaaattag	gaaagtgtt	1680

<210> 78
 <211> 1668
 <212> DNA
 <213> Artificial

<220>

<223> HIV Type C Mutated Reverse Transcriptase Optimized

<400> 78

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gtgaaggagt	ggcccctgac	cgaggagaag	atcaaggccc	tgaccgccat	ctgcgaggag	120
atggagaagg	agggcaagat	caccaagatc	ggccccgaca	accctacaa	caccccccgtg	180
ttcgccatca	agaagaagga	cagcaccaag	tggcgcaagc	tggtgactt	ccgcgagctg	240
aacaagcgca	cccaggactt	ctgggaggtg	cagctggca	tcccccaccc	cgccggcctg	300
aagaagaaga	agagcgtgac	cgtgctggac	gtggcgacg	cctacttcag	cgtccccctg	360
gacgagagct	tccgcaagta	caccgccttc	accatcccc	gcatcaacaa	cgagaccccc	420
ggcatccgct	accagtacaa	cgtgctgccc	cagggctgga	agggcagccc	cgccatcttc	480
cagagcagca	tgaccaagat	cctggagccc	ttccgcgcca	agaaccccgaa	catcgtgatc	540
taccaggccc	ccctgtacgt	ggcagcgcac	ctggagatcg	gccagcaccg	cgccaagatc	600
gaggagctgc	gcgagcacct	gctgaagtgg	ggcttcacca	cccccgacaa	gaagcaccag	660
aaggagccccc	ctttcctgcc	catcgagctg	caccccgaca	agtggaccgt	gcagcccatc	720
ctgctccccg	agaaggacag	ctggaccgtg	aacgacatcc	agaagctgg	ggcaagctg	780
aactgggcca	gccagatcta	ccccggcattc	aaggtgcgcc	agctgtgcaa	gctgctgcgc	840
ggcgccaagg	ccctgaccga	catcggtccc	ctgaccgagg	aggccgagct	ggagctggcc	900
gagaaccgcg	agatcctgcg	cgagcccgtg	cacggcgtgt	actacgaccc	cagcaaggac	960
ctgatcgccg	agatccagaa	gcagggccac	gagcagtgga	cctaccagat	ctaccaggag	1020
cccttcaaga	acctgaagac	cggcaagtac	gccaagatgc	gcaccaccca	caccaacgcac	1080
gtgaagcagc	tgaccgaggc	cgtgcagaag	atcgccatgg	agagcatcgt	gatctggggc	1140
aagaccccca	agttccgcct	gccccatccag	aaggagacct	gggagacctg	gtggaccgac	1200
tactggcagg	ccacctggat	ccccgagtgg	gagttcgtga	acacccccc	cctggtaag	1260
ctgtggtacc	agctggagaa	ggacccatc	gccggcgtgg	agaccttcta	cgtggacggc	1320
gccaccaacc	gcgaggccaa	gatcgcaag	gccggctacg	tgaccgaccc	cggccgcccag	1380
aagatcgtga	ccctgaccaa	caccaccaac	cagaagaccc	agctgcaggc	catccagctg	1440
gccctgcagg	acagcggcag	cgaggtgaac	atcgtgaccc	acagccagta	cgcctgggc	1500
atcatccagg	cccagcccga	caagagcgcac	agcgagatct	tcaaccagat	catcgagcag	1560
ctgatcaaca	aggagcgcac	ctacctgagc	tgggtgcccc	cccacaaggg	catcgccggc	1620

aacgagcagg tggacaagct ggtgagcaag ggcatccgca aggtgctg 1668

<210> 79
<211> 1668
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Mutated Reverse Transcriptase Wild Type

<400> 79
ccaatttagtc ctattgaaac tgtaccagta aaattaaaac caggaatgga tggcccaaag 60
gtcaaacaat ggccattgac agaagaaaaa ataaaagcat taacagcaat ttgtgaggaa 120
atggagaagg aaggaaaaat tacaaaaatt gggcctgata atccatataa cactccagta 180
tttgcataa aaaagaagga cagtactaag tggagaaaat tagtagattt cagggaaactc 240
aataaaagaa ctcaagactt ttgggaagtt caatttagaa taccacaccc agcaggattta 300
aaaaagaaaa aatcagtgac agtgcttagat gtggggatg catattttc agttccttta 360
gatgaaagct tcagggaaata tactgcattc accataccta gtataaacaa tgaaacacca 420
gggatttagat atcaatataa tggctgcca cagggatgga aaggatcacc agcaatattc 480
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<211> 216
<212> DNA
<213> Artificial

<220>
<223> HIV Type C TatC22Exon1 Optimized

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aagggcctgg gcatcagcta cggccgcaag aagcgccgccc agcgccgcag cgcccccccc 180
agcggcgagg accaccagaa cccctgagc aagcag 216

<210> 81
<211> 216
<212> DNA
<213> Artificial

<220>
<223> HIV Type C TatExon1 Optimized

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agcggcgagg accaccagaa cccctgagc aagcag 216

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<211> 216
<212> DNA
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<220>
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<210>	83	
<211>	93	
<212>	DNA	
<213>	Artificial	
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agcaagaccc agaccgaccc ctacgactgg tga	93	
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<223>	HIV Type C TatExon2 Wild Type	
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agcaagacag agacagatcc atacgattgg tga	93	
<210>	85	
<211>	579	
<212>	DNA	
<213>	Artificial	
<220>		
<223>	HIV Type C Vif Optimized	
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tggAACAGCC TGGTGAAGCA CCACATGTAC ATCAGCCGCC GCGCCAGCGG CTGGGTGTAC	120	
CGCCACACT TCAGAGCCG CCACCCAAAG GTGAGCAGCG AGGTGCACAT CCCCTGGC	180	
GACGCCGCC TGGTGTCAA GACCTACTGG GGCCTGCAGA CGGGCGAGCG CGACTGGCAC	240	
CTGGGCCACG CGCTGAGCAT CGAGTGGCGC CTGCGCGAGT ACAGCACCCA GGTGGACCCC	300	

gacctggccg accagctgat ccacatgcac tacttcgact gcttcaccga gagcgccatc	360
cgccaggcca tcctggcca catcggttc ccccgtcg actaccaggc cgccacaag	420
aaggtggca gcctgcagta cctggccctg accgcctga tcaagccaa gaagcgcaag	480
ccccccctgc ccagcgtcg caagctggtg gaggaccgct ggaacgaccc ccagaagacc	540
cgcggccgcc gcgcaacca caccatgaac ggccactag	579

<210> 86
<211> 579
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Vif Wild Type

<400> 86	
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agacatcatt ttgaaagcag acatccaaaa gtaagttcag aagtacatat cccatttaggg	180
gatgctagat tagtaataaa aacatattgg gtttgcaga caggagaaag agattggcat	240
ttgggtcatg gagtctccat agaatggaga ctgagagaat acagcacaca agtagaccct	300
gacctggcag accagcta at tcacatgc at tatttgatt gtttacaga atctgccata	360
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aaggtaggat ctctgcaata ctggcactg acagcattga taaaaccaa aaagagaaaag	480
ccacctctgc ctatgttag aaaattagta gaggatagat ggaacgaccc ccagaagacc	540
aggggccgca gagggAACCA tacaatgaat ggacactag	579

<210> 87
<211> 288
<212> DNA
<213> Artificial

<220>
<223> HIV Type C Vpr Optimized

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gagatcctgg aggagctgaa gcaggaggcc gtgcgccact tcccccggcc ctggctgcac	120
agcctggcc agtacatcta cgagacctac ggcgacaccc ggaccggcgt ggaggccatc	180
atcccggtgc tgcagcagct gctgttcatc cacttccgca tcggctgcca gcacagccgc	240

atcgcatcc	tgcgccagcg	ccgcgcggc	aacggcgcca	gccgcagc	288	
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<211>	288					
<212>	DNA					
<213>	Artificial					
<220>						
<223>	HIV Type C Vpr Wild Type					
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agcttaggac	aatatatcta	tgaaacctat	ggggatactt	ggacgggagt	tgaagctata	180
ataagagtac	tgcaacaact	actgttcatt	catttcagaa	ttggatgcca	acatagcaga	240
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<211>	267					
<212>	DNA					
<213>	Artificial					
<220>						
<223>	HIV Type C Vpu Optimized					
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gtgcgccaga	agaagatcga	ctggctgatc	aagcgcatcc	gcgagcgcgc	cgaggacagc	180
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<210>	90					
<211>	267					
<212>	DNA					
<213>	Artificial					
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gtaagacaaa agaaaataga ctggtaatt aaaagaatta gggaaagagc agaagacagt	180
ggcaatgaga gtgatgggaa cacagaagaa ttgtcaacaa tggtgatat gggcatctt	240
aggttctgg atgctaataa tttgtaa	267
<210> 91	
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<212> DNA	
<213> Artificial	
<220>	
<223> HIV Type C RevExon 1 and 2 Optimized	
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cgcgcgcgct ggccgcgcgc ccagcgccag atccacacca tcggcgagcg catcctggtg	180
gcctgcctgg gccgcagcgc cgagccctgtg cccctgcagc tgccccccct ggagcgcctg	240
cacatcaact gcagcgaggg cagcggcacc agcggcaccc agcagagcca gggcaccacc	300
gagggcgtgg gcgaccctta a	321
<210> 92	
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<212> DNA	
<213> Artificial	
<220>	
<223> HIV Type C RevExon 1 and 2 Wild Type	
<400> 92	
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cgaagaagaa ggtggagagc aagacagaga cagatccata cgattggta gcgattctt	180
gtcgcttgcc tgggacgatc tgcggagcct gtgccttcc agtaccacc gctttagaga	240
cttcatatta attgcagtga gggcagtggaa acttctggaa cacagcagtc tcagggact	300
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<210> 93	
<211> 309	
<212> DNA	
<213> Artificial	
<220>	

<223> HIV Type C TatC22 Exon 1 and 2 Optimized

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gcggcaaca actgcttctg caagcactgc agtaccact gcctggtgtg cttccagacc 120
aaggcctgg gcatcagcta cggccgcaag aagcgccgcc agcgccgcag cgcccccccc 180
agcggcgagg accaccagaa ccccctgagc aagcagcccc tgccccaggc ccgcggcgac 240
agcacccggca gcgaggagag caagaagaag gtggagagca agaccgagac cgacccctac 300
gactggtga 309

<210> 94

<211> 309

<212> DNA

<213> Artificial

<220>

<223> HIV Type C Tat Exon 1 and 2 Optimized

<400> 94
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gcctgcaaca actgcttctg caagcactgc agtaccact gcctggtgtg cttccagacc 120
aaggcctgg gcatcagcta cggccgcaag aagcgccgcc agcgccgcag cgcccccccc 180
agcggcgagg accaccagaa ccccctgagc aagcagcccc tgccccaggc ccgcggcgac 240
agcacccggca gcgaggagag caagaagaag gtggagagca agaccgagac cgacccctac 300
gactggtga 309

<210> 95

<211> 309

<212> DNA

<213> Artificial

<220>

<223> HIV Type C Tat Exon 1 and 2 Wild Type

<400> 95
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agtggtaag atcatcaaaa tcctctatca aagcagccct taccccaagc ccgaggggac 240
tcgacaggct cggaggaatc gaagaagaag gtggagagca agacagagac agatccatac 300

gattggta

309

<210> 96
<211> 624
<212> DNA
<213> Artificial

<220>

<223> HIV Type C NefD125g Optimized Myristylation Modification

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<210> 97
<211> 2565
<212> DNA
<213> Artificial

<220>

<223> Envgp160_TV2_C_ZAopt

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<210> 98
<211> 2565
<212> DNA
<213> Artificial

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ataaaacagc tacaaccagc tcttcagaca ggaacagagg aaatttagatc attatttaac      240
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<211> 3009
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<220>
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<213> Artificial

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<211> 288
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<213> Artificial

<220>
<223> Vpr_TV2_C_ZAopt

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aacctgggcc agcacatcta cgagacactac ggcgcacaccc ggaccggcgt ggaggccatc      180
atccgcatcc tgcagcagct gctgttcatc cacttccgca tcggctgccca ccacagccgc      240
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<211> 288
<212> DNA
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<220>
<223> Vpr_TV2_C_ZAwt

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 aaccttaggac aacatatcta taaaacctat ggagatactt ggacaggagt tgaagcaata 180
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<220>
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 cagcgcaaga tcgactggct ggtgaagcgc atccgcgagc gcgccgagga cagcggcaac 180
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<220>
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<211> 10
<212> PRT
<213> Artificial

<220>
<223> wild-type amino acid sequence changed by mutation in gp120/gp41 cleavage site

<400> 129

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<210> 130
<211> 10
<212> PRT
<213> Artificial

<220>
<223> wild-type amino acid sequence changed by mutation in gp120/gp41 cleavage site

<400> 130

Ile Ser Ser Val Val Gln Ser Glu Lys Ser

1

5

10

<210> 131
 <211> 2052
 <212> DNA
 <213> Artificial

 <220>
 <223> gp140mod.TV1.tpa1

 <400> 131

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<211> 2073
<212> DNA
<213> Artificial

<220>
<223> gp140mod.TV1

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	tacgagaccg	aggtgcacaa	cgtgtggcc	acccacgcct	gcgtgcccac	cgaccccaac	240
	ccccaggaga	tcgtgctggg	caacgtgacc	gagaacttca	acatgtggaa	gaacgacatg	300
	gccgaccaga	tgcacgagga	cgtgatcagc	ctgtgggacc	agagcctgaa	gccctgcgtg	360
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atcagcaact acaccggcct gatctacaac ctgctggagg acagccagaa ccagcaggag	1980
aagaacgaga aggacctgct ggagctggac aagtggaaaca acctgtggaa ctggttcgac	2040
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 <212> DNA
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gccgaccaga tgcacgagga cgtgatcagc ctgtggacc agagcctgaa gccctgcgtg	360
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gccctgttct accgcctgga catcggtccc ctgaacgaga acagcgacaa cttcacctac	600
cgcctgatca actgcaacac cagcaccatc acccaggcct gccccaggt gagcttcgac	660
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accttcaacg gcaccggccc ctgctacaac gtgagcaccg tgcagtgcac ccacggcatc	780
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atctggggct gcagcggccg cctgatctgc accaccgccc tgccctggaa cagcagctgg	1860
agcaacaaga gcgagaagga catctggac aacatgacct ggatgcagt ggaccgcgag	1920
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aagaacgaga aggacctgct ggagctggac aagtggaaca acctgtggaa ctggttcgac	2040
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<211> 624
<212> DNA
<213> Artificial

<220>
<223> NefD125G_TV2_C_ZAopt

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acctacaagg cgcgcacatcga cctgagcttc ttccctgaagg agaaggcgcc cctggagggc	300
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gagaacaact gcctgctgca ccccatgagc cagcacggca tggaggacga ggaccgcgag	540
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cccgagttact acaaggactg ctga	624

<210> 135
<211> 624
<212> DNA
<213> Artificial

<220>
<223> NefD125G-Myr_TV2_C_ZAopt

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caggaggagg agggcgaggt gggcttcccc gtgcgcccc aggtgcccc gcgccccatg 240
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ggctggtaact tcaagctgga gcccgtggac ccccgcgagg tggaggaggc caacgagggc 480
gagaacaact gcctgctgca ccccatgagc cagcacggca tggaggacga ggaccgcccag 540
gtgctgcgct ggaagttcga cagcacccctg gcccggcc acatggcccc cgagctgcac 600
cccgagact acaaggactg ctga 624

<210>	136
<211>	27
<212>	PRT
<213>	Artificial

<220>
<223> TV1c8.2 signal peptide leader sequence

<400> 136

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1           5           10          15

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Gly Ile Leu Gly Phe Trp Met Leu Met Ile Cys
20 25

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<210> 137  
<211> 81  
<212> DNA  
<213> Artificial
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<220>
<223> WTnative (8-2_TV1_C.ZA) signal peptide leader sequence

<400> 137

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ttctggatgc taatgatttg t 81

ttctggatgc taatgatttg t 81

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1210-138

<210> 138
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<211> 81
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<213> Artificial

<220>
<223> WTmod (8-2_TV1_C.ZA) signal peptide leader sequence

<400> 138
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ttctggatgc tgatgatctg c                                         81

<210> 139
<211> 25
<212> PRT
<213> Artificial

<220>
<223> Tpa1 signal peptide leader sequence

<400> 139

Met Asp Ala Met Lys Arg Gly Leu Cys Cys Val Leu Leu Leu Cys Gly
1                      5                         10                     15

Ala Val Phe Val Ser Pro Ser Ala Ser
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<210> 140
<211> 75
<212> DNA
<213> Artificial

<220>
<223> Tpa1 signal peptide leader sequence

<400> 140
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tcgcccagcg ccagc                                         75

<210> 141
<211> 23
<212> PRT
<213> Artificial

<220>
<223> Tpa2 signal peptide leader sequence

<400> 141

Met Asp Ala Met Lys Arg Gly Leu Cys Cys Val Leu Leu Leu Cys Gly
1                      5                         10                     15

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Ala Val Phe Val Ser Pro Ser
20

<210> 142
<211> 69
<212> DNA
<213> Artificial

<220>
<223> Tpa2 signal peptide leader sequence

<400> 142
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tcgccccagc 69

<210> 143
<211> 842
<212> PRT
<213> Human immunodeficiency virus SF162

<400> 143

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20 25 30

Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Thr Thr Thr Leu Phe Cys
35 40 45

Ala Ser Asp Ala Lys Ala Tyr Asp Thr Glu Val His Asn Val Trp Ala
50 55 60

Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln Glu Ile Val Leu
65 70 75 80

Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn Asn Met Val Glu
85 90 95

Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln Ser Leu Lys Pro
100 105 110

Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu His Cys Thr Asn Leu
115 120 125

Lys Asn Ala Thr Asn Thr Lys Ser Ser Asn Trp Lys Glu Met Asp Arg
130 135 140

Gly Glu Ile Lys Asn Cys Ser Phe Lys Val Thr Thr Ser Ile Arg Asn
145 150 155 160

Lys Met Gln Lys Glu Tyr Ala Leu Phe Tyr Lys Leu Asp Val Val Pro
165 170 175

Ile Asp Asn Asp Asn Thr Ser Tyr Lys Leu Ile Asn Cys Asn Thr Ser
180 185 190

Val Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Glu Pro Ile Pro Ile
195 200 205

His Tyr Cys Ala Pro Ala Gly Phe Ala Ile Leu Lys Cys Asn Asp Lys
210 215 220

Lys Phe Asn Gly Ser Gly Pro Cys Thr Asn Val Ser Thr Val Gln Cys
225 230 235 240

Thr His Gly Ile Arg Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly
245 250 255

Ser Leu Ala Glu Glu Gly Val Val Ile Arg Ser Glu Asn Phe Thr Asp
260 265 270

Asn Ala Lys Thr Ile Ile Val Gln Leu Lys Glu Ser Val Glu Ile Asn
275 280 285

Cys Thr Arg Pro Asn Asn Asn Thr Arg Lys Ser Ile Thr Ile Gly Pro
290 295 300

Gly Arg Ala Phe Tyr Ala Thr Gly Asp Ile Ile Gly Asp Ile Arg Gln
305 310 315 320

Ala His Cys Asn Ile Ser Gly Glu Lys Trp Asn Asn Thr Leu Lys Gln
325 330 335

Ile Val Thr Lys Leu Gln Ala Gln Phe Gly Asn Lys Thr Ile Val Phe
340 345 350

Lys Gln Ser Ser Gly Gly Asp Pro Glu Ile Val Met His Ser Phe Asn

355

360

365

Cys Gly Gly Glu Phe Phe Tyr Cys Asn Ser Thr Gln Leu Phe Asn Ser
370 375 380

Thr Trp Asn Asn Thr Ile Gly Pro Asn Asn Thr Asn Gly Thr Ile Thr
385 390 395 400

Leu Pro Cys Arg Ile Lys Gln Ile Ile Asn Arg Trp Gln Glu Val Gly
405 410 415

Lys Ala Met Tyr Ala Pro Pro Ile Arg Gly Gln Ile Arg Cys Ser Ser
420 425 430

Asn Ile Thr Gly Leu Leu Leu Thr Arg Asp Gly Gly Lys Glu Ile Ser
435 440 445

Asn Thr Thr Glu Ile Phe Arg Pro Gly Gly Asp Met Arg Asp Asn
450 455 460

Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Lys Ile Glu Pro Leu
465 470 475 480

Gly Val Ala Pro Thr Lys Ala Lys Arg Arg Val Val Gln Arg Glu Lys
485 490 495

Arg Ala Val Thr Leu Gly Ala Met Phe Leu Gly Phe Leu Gly Ala Ala
500 505 510

Gly Ser Thr Met Gly Ala Arg Ser Leu Thr Leu Thr Val Gln Ala Arg
515 520 525

Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Asn Asn Leu Leu Arg Ala
530 535 540

Ile Glu Ala Gln Gln His Leu Leu Gln Leu Thr Val Trp Gly Ile Lys
545 550 555 560

Gln Leu Gln Ala Arg Val Leu Ala Val Glu Arg Tyr Leu Lys Asp Gln
565 570 575

Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr
580 585 590

Ala Val Pro Trp Asn Ala Ser Trp Ser Asn Lys Ser Leu Asp Gln Ile
595 600 605

Trp Asn Asn Met Thr Trp Met Glu Trp Glu Arg Glu Ile Asp Asn Tyr
610 615 620

Thr Asn Leu Ile Tyr Thr Leu Ile Glu Glu Ser Gln Asn Gln Gln Glu
625 630 635 640

Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp Ala Ser Leu Trp
645 650 655

Asn Trp Phe Asp Ile Ser Lys Trp Leu Trp Tyr Ile Lys Ile Phe Ile
660 665 670

Met Ile Val Gly Gly Leu Val Gly Leu Arg Ile Val Phe Thr Val Leu
675 680 685

Ser Ile Val Asn Arg Val Arg Gln Gly Tyr Ser Pro Leu Ser Phe Gln
690 695 700

Thr Arg Phe Pro Ala Pro Arg Gly Pro Asp Arg Pro Glu Gly Ile Glu
705 710 715 720

Glu Glu Gly Gly Glu Arg Asp Arg Asp Arg Ser Ser Pro Leu Val His
725 730 735

Gly Leu Leu Ala Leu Ile Trp Asp Asp Leu Arg Ser Leu Cys Leu Phe
740 745 750

Ser Tyr His Arg Leu Arg Asp Leu Ile Leu Ile Ala Ala Arg Ile Val
755 760 765

Glu Leu Leu Gly Arg Arg Gly Trp Glu Ala Leu Lys Tyr Trp Gly Asn
770 775 780

Leu Leu Gln Tyr Trp Ile Gln Glu Leu Lys Asn Ser Ala Val Ser Leu
785 790 795 800

Phe Asp Ala Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile
805 810 815

Glu Val Ala Gln Arg Ile Gly Arg Ala Phe Leu His Ile Pro Arg Arg
820 825 830

Ile Arg Gln Gly Phe Glu Arg Ala Leu Leu
835 840

<210> 144
<211> 867
<212> PRT
<213> Human immunodeficiency virus TV1.8_2

<400> 144

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20 25 30

Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Asp Ala Lys Thr
35 40 45

Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Thr Glu Val His
50 55 60

Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln
65 70 75 80

Glu Ile Val Leu Gly Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn
85 90 95

Asp Met Ala Asp Gln Met His Glu Asp Val Ile Ser Leu Trp Asp Gln
100 105 110

Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu Asn
115 120 125

Cys Thr Asp Thr Asn Val Thr Gly Asn Arg Thr Val Thr Gly Asn Ser
130 135 140

Thr Asn Asn Thr Asn Gly Thr Gly Ile Tyr Asn Ile Glu Glu Met Lys
145 150 155 160

Asn Cys Ser Phe Asn Ala Thr Thr Glu Leu Arg Asp Lys Lys His Lys

165

170

175

Glu Tyr Ala Leu Phe Tyr Arg Leu Asp Ile Val Pro Leu Asn Glu Asn
180 185 190

Ser Asp Asn Phe Thr Tyr Arg Leu Ile Asn Cys Asn Thr Ser Thr Ile
195 200 205

Thr Gln Ala Cys Pro Lys Val Ser Phe Asp Pro Ile Pro Ile His Tyr
210 215 220

Cys Ala Pro Ala Gly Tyr Ala Ile Leu Lys Cys Asn Asn Lys Thr Phe
225 230 235 240

Asn Gly Thr Gly Pro Cys Tyr Asn Val Ser Thr Val Gln Cys Thr His
245 250 255

Gly Ile Lys Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly Ser Leu
260 265 270

Ala Glu Glu Gly Ile Ile Arg Ser Glu Asn Leu Thr Glu Asn Thr
275 280 285

Lys Thr Ile Ile Val His Leu Asn Glu Ser Val Glu Ile Asn Cys Thr
290 295 300

Arg Pro Asn Asn Asn Thr Arg Lys Ser Val Arg Ile Gly Pro Gly Gln
305 310 315 320

Ala Phe Tyr Ala Thr Asn Asp Val Ile Gly Asn Ile Arg Gln Ala His
325 330 335

Cys Asn Ile Ser Thr Asp Arg Trp Asn Lys Thr Leu Gln Gln Val Met
340 345 350

Lys Lys Leu Gly Glu His Phe Pro Asn Lys Thr Ile Gln Phe Lys Pro
355 360 365

His Ala Gly Gly Asp Leu Glu Ile Thr Met His Ser Phe Asn Cys Arg
370 375 380

Gly Glu Phe Phe Tyr Cys Asn Thr Ser Asn Leu Phe Asn Ser Thr Tyr
385 390 395 400

His Ser Asn Asn Gly Thr Tyr Lys Tyr Asn Gly Asn Ser Ser Ser Pro
405 410 415

Ile Thr Leu Gln Cys Lys Ile Lys Gln Ile Val Arg Met Trp Gln Gly
420 425 430

Val Gly Gln Ala Thr Tyr Ala Pro Pro Ile Ala Gly Asn Ile Thr Cys
435 440 445

Arg Ser Asn Ile Thr Gly Ile Leu Leu Thr Arg Asp Gly Gly Phe Asn
450 455 460

Thr Thr Asn Asn Thr Glu Thr Phe Arg Pro Gly Gly Asp Met Arg
465 470 475 480

Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Glu Ile Lys
485 490 495

Pro Leu Gly Ile Ala Pro Thr Lys Ala Lys Arg Arg Val Val Gln Arg
500 505 510

Glu Lys Arg Ala Val Gly Ile Gly Ala Val Phe Leu Gly Phe Leu Gly
515 520 525

Ala Ala Gly Ser Thr Met Gly Ala Ala Ser Ile Thr Leu Thr Val Gln
530 535 540

Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Ser Asn Leu Leu
545 550 555 560

Lys Ala Ile Glu Ala Gln Gln His Met Leu Gln Leu Thr Val Trp Gly
565 570 575

Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Ile Glu Arg Tyr Leu Lys
580 585 590

Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly Arg Leu Ile Cys
595 600 605

Thr Thr Ala Val Pro Trp Asn Ser Ser Trp Ser Asn Lys Ser Glu Lys
610 615 620

Asp Ile Trp Asp Asn Met Thr Trp Met Gln Trp Asp Arg Glu Ile Ser
625 630 635 640

Asn Tyr Thr Gly Leu Ile Tyr Asn Leu Leu Glu Asp Ser Gln Asn Gln
645 650 655

Gln Glu Lys Asn Glu Lys Asp Leu Leu Glu Leu Asp Lys Trp Asn Asn
660 665 670

Leu Trp Asn Trp Phe Asp Ile Ser Asn Trp Pro Trp Tyr Ile Lys Ile
675 680 685

Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg Ile Ile Phe Ala
690 695 700

Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly Tyr Ser Pro Leu Ser
705 710 715 720

Phe Gln Thr Leu Thr Pro Ser Pro Arg Gly Leu Asp Arg Leu Gly Gly
725 730 735

Ile Glu Glu Glu Gly Glu Gln Asp Arg Asp Arg Ser Ile Arg Leu
740 745 750

Val Ser Gly Phe Leu Ser Leu Ala Trp Asp Asp Leu Arg Asn Leu Cys
755 760 765

Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile Leu Ile Ala Val Arg
770 775 780

Ala Val Glu Leu Leu Gly His Ser Ser Leu Arg Gly Leu Gln Arg Gly
785 790 795 800

Trp Glu Ile Leu Lys Tyr Leu Gly Ser Leu Val Gln Tyr Trp Gly Leu
805 810 815

Glu Leu Lys Lys Ser Ala Ile Ser Leu Leu Asp Thr Ile Ala Ile Thr
820 825 830

Val Ala Glu Gly Thr Asp Arg Ile Ile Glu Leu Val Gln Arg Ile Cys
835 840 845

Arg Ala Ile Leu Asn Ile Pro Arg Arg Ile Arg Gln Gly Phe Glu Ala
850 860

Ala Leu Leu
865

<210> 145
<211> 869
<212> PRT
<213> Human immunodeficiency virus TV1.8_5

<400> 145

Met Arg Val Met Gly Thr Gln Lys Asn Cys Gln Gln Trp Trp Ile Trp
1 15

Gly Ile Leu Gly Phe Trp Met Leu Met Ile Cys Asn Thr Glu Asp Leu
20 30

Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Glu Ala Lys Thr
35 45

Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Thr Glu Val His
50 60

Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln
65 80

Glu Ile Val Leu Gly Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn
85 95

Asn Met Ala Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln
100 110

Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu Asn
115 125

Cys Thr Asp Thr Asn Val Thr Gly Asn Arg Thr Val Thr Gly Asn Thr
130 140

Asn Asp Thr Asn Ile Ala Asn Ala Thr Tyr Lys Tyr Glu Glu Met Lys
145 160

Asn Cys Ser Phe Asn Ala Thr Thr Glu Leu Arg Asp Lys Lys His Lys
165 175

Glu Tyr Ala Leu Phe Tyr Lys Leu Asp Ile Val Pro Leu Asn Glu Asn
180 185 190

Ser Asn Asn Phe Thr Tyr Arg Leu Ile Asn Cys Asn Thr Ser Thr Ile
195 200 205

Thr Gln Ala Cys Pro Lys Val Ser Phe Asp Pro Ile Pro Ile His Tyr
210 215 220

Cys Ala Pro Ala Asp Tyr Ala Ile Leu Lys Cys Asn Asn Lys Thr Phe
225 230 240

Asn Gly Thr Gly Pro Cys Tyr Asn Val Ser Thr Val Gln Cys Thr His
245 250 255

Gly Ile Lys Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly Ser Leu
260 265 270

Ala Glu Glu Gly Ile Ile Arg Ser Glu Asn Leu Thr Glu Asn Thr
275 280 285

Lys Thr Ile Ile Val His Leu Asn Glu Ser Val Glu Ile Asn Cys Thr
290 295 300

Arg Pro Asn Asn Asn Thr Arg Lys Ser Val Arg Ile Gly Pro Gly Gln
305 310 315 320

Ala Phe Tyr Ala Thr Asn Asp Val Ile Gly Asn Ile Arg Gln Ala His
325 330 335

Cys Asn Ile Ser Thr Asp Arg Trp Asn Lys Thr Leu Gln Gln Val Met
340 345 350

Lys Lys Leu Gly Glu His Phe Pro Asn Lys Thr Ile Lys Phe Glu Pro
355 360 365

His Ala Gly Gly Asp Leu Glu Ile Thr Met His Ser Phe Asn Cys Arg
370 375 380

Gly Glu Phe Phe Tyr Cys Asn Thr Ser Asn Leu Phe Asn Ser Thr Tyr
385 390 395 400

Tyr Pro Lys Asn Gly Thr Tyr Lys Tyr Asn Gly Asn Ser Ser Leu Pro
405 410 415

Ile Thr Leu Gln Cys Lys Ile Lys Gln Ile Val Arg Met Trp Gln Gly
420 425 430

Val Gly Gln Ala Met Tyr Ala Pro Pro Ile Ala Gly Asn Ile Thr Cys
435 440 445

Arg Ser Asn Ile Thr Gly Ile Leu Leu Thr Arg Asp Gly Gly Phe Asn
450 455 460

Asn Thr Asn Asn Asp Thr Glu Glu Thr Phe Arg Pro Gly Gly Asp
465 470 475 480

Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val Glu
485 490 495

Ile Lys Pro Leu Gly Ile Ala Pro Thr Lys Ala Lys Arg Arg Val Val
500 505 510

Gln Arg Lys Lys Arg Ala Val Gly Ile Gly Ala Val Phe Leu Gly Phe
515 520 525

Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser Ile Thr Leu Thr
530 535 540

Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Ser Asn
545 550 555 560

Leu Leu Lys Ala Ile Glu Ala Gln Gln His Met Leu Gln Leu Thr Val
565 570 575

Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Ile Glu Arg Tyr
580 585 590

Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly Arg Leu
595 600 605

Ile Cys Thr Thr Ala Val Pro Trp Asn Ser Ser Trp Ser Asn Lys Ser
610 615 620

Glu Ala Asp Ile Trp Asp Asn Met Thr Trp Met Gln Trp Asp Arg Glu
625 630 635 640

Ile Asn Asn Tyr Thr Glu Thr Ile Phe Arg Leu Leu Glu Asp Ser Gln
645 650 655

Asn Gln Gln Glu Lys Asn Glu Lys Asp Leu Leu Glu Leu Asp Lys Trp
660 665 670

Asn Asn Leu Trp Asn Trp Phe Asp Ile Ser Asn Trp Leu Trp Tyr Ile
675 680 685

Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg Ile Ile
690 695 700

Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly Tyr Ser Pro
705 710 715 720

Leu Ser Phe Gln Thr Leu Thr Pro Ser Pro Arg Gly Leu Asp Arg Leu
725 730 735

Gly Gly Ile Glu Glu Gly Gly Glu Gln Asp Arg Asp Arg Ser Ile
740 745 750

Arg Leu Val Ser Gly Phe Leu Ser Leu Ala Trp Asp Asp Leu Arg Ser
755 760 765

Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile Leu Ile Ala
770 775 780

Val Arg Ala Val Glu Leu Leu Gly His Ser Ser Leu Arg Gly Leu Gln
785 790 795 800

Arg Gly Trp Glu Ile Leu Lys Tyr Leu Gly Ser Leu Val Gln Tyr Trp
805 810 815

Gly Leu Glu Leu Lys Lys Ser Ala Ile Ser Pro Leu Asp Thr Ile Ala
820 825 830

Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile Glu Leu Val Gln Arg
835 840 845

Ile Cys Arg Ala Ile Leu Asn Ile Pro Arg Arg Ile Arg Gln Gly Phe

850

855

860

Glu Ala Ala Leu Leu
865

<210> 146
<211> 854
<212> PRT
<213> Human immunodeficiency virus TV2.12-5/1

<400> 146

Met Arg Ala Arg Gly Ile Leu Lys Asn Tyr Arg His Trp Trp Ile Trp
1 5 10 15

Gly Ile Leu Gly Phe Trp Met Leu Met Met Cys Asn Val Lys Gly Leu
20 25 30

Trp Val Thr Val Tyr Tyr Gly Val Pro Val Gly Arg Glu Ala Lys Thr
35 40 45

Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Lys Glu Val His
50 55 60

Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln
65 70 75 80

Glu Val Ile Leu Gly Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn
85 90 95

Asp Met Val Asp Gln Met Gln Glu Asp Ile Ile Ser Leu Trp Asp Gln
100 105 110

Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu Asn
115 120 125

Cys Thr Asn Ala Thr Val Asn Tyr Asn Asn Thr Ser Lys Asp Met Lys
130 135 140

Asn Cys Ser Phe Tyr Val Thr Glu Leu Arg Asp Lys Lys Lys Lys
145 150 155 160

Glu Asn Ala Leu Phe Tyr Arg Leu Asp Ile Val Pro Leu Asn Asn Arg
165 170 175

Lys Asn Gly Asn Ile Asn Asn Tyr Arg Leu Ile Asn Cys Asn Thr Ser
180 185 190

Ala Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Asp Pro Ile Pro Ile
195 200 205

His Tyr Cys Ala Pro Ala Gly Tyr Ala Pro Leu Lys Cys Asn Asn Lys
210 215 220

Lys Phe Asn Gly Ile Gly Pro Cys Asp Asn Val Ser Thr Val Gln Cys
225 230 235 240

Thr His Gly Ile Lys Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly
245 250 255

Ser Leu Ala Glu Glu Glu Ile Ile Arg Ser Glu Asn Leu Thr Asn
260 265 270

Asn Val Lys Thr Ile Ile Val His Leu Asn Glu Ser Ile Glu Ile Lys
275 280 285

Cys Thr Arg Pro Gly Asn Asn Thr Arg Lys Ser Val Arg Ile Gly Pro
290 295 300 305

Gly Gln Ala Phe Tyr Ala Thr Gly Asp Ile Ile Gly Asp Ile Arg Gln
310 315 320

Ala His Cys Asn Ile Ser Lys Asn Glu Trp Asn Thr Thr Leu Gln Arg
325 330 335

Val Ser Gln Lys Leu Gln Glu Leu Phe Pro Asn Ser Thr Gly Ile Lys
340 345 350

Phe Ala Pro His Ser Gly Gly Asp Leu Glu Ile Thr Thr His Ser Phe
355 360 365

Asn Cys Gly Gly Glu Phe Phe Tyr Cys Asn Thr Thr Asp Leu Phe Asn
370 375 380

Ser Thr Tyr Ser Asn Gly Thr Cys Thr Asn Gly Thr Cys Met Ser Asn
385 390 395 400

Asn Thr Glu Arg Ile Thr Leu Gln Cys Arg Ile Lys Gln Ile Ile Asn
405 410 415

Met Trp Gln Glu Val Gly Arg Ala Met Tyr Ala Pro Pro Ile Ala Gly
420 425 430

Asn Ile Thr Cys Arg Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg Asp
435 440 445

Gly Gly Asp Asn Asn Thr Glu Thr Glu Thr Phe Arg Pro Gly Gly Gly
450 455 460

Asp Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr Lys Tyr Lys Val Val
465 470 475 480

Glu Ile Lys Pro Leu Gly Val Ala Pro Thr Ala Ala Lys Arg Arg Val
485 490 495

Val Glu Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val Phe Leu Gly
500 505 510

Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala Ala Ser Ile Thr Leu
515 520 525

Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln Ser
530 535 540

Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Met Leu Gln Leu Thr
545 550 555 560

Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Ile Glu Arg
565 570 575

Tyr Leu Gln Asp Gln Gln Leu Leu Gly Leu Trp Gly Cys Ser Gly Lys
580 585 590

Leu Ile Cys Thr Thr Asn Val Leu Trp Asn Ser Ser Trp Ser Asn Lys
595 600 605

Thr Gln Ser Asp Ile Trp Asp Asn Met Thr Trp Met Gln Trp Asp Arg
610 615 620

Glu Ile Ser Asn Tyr Thr Asn Thr Ile Tyr Arg Leu Leu Glu Asp Ser

625 630 635 640

Gln Ser Gln Gln Glu Arg Asn Glu Lys Asp Leu Leu Ala Leu Asp Arg
645 650 655

Trp Asn Asn Leu Trp Asn Trp Phe Ser Ile Thr Asn Trp Leu Trp Tyr
660 665 670

Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg Ile
675 680 685

Ile Phe Ala Val Leu Ser Leu Val Asn Arg Val Arg Gln Gly Tyr Ser
690 695 700

Pro Leu Ser Leu Gln Thr Leu Ile Pro Asn Pro Arg Gly Pro Asp Arg
705 710 715 720

Leu Gly Gly Ile Glu Glu Gly Gly Glu Gln Asp Ser Ser Arg Ser
725 730 735

Ile Arg Leu Val Ser Gly Phe Leu Thr Leu Ala Trp Asp Asp Leu Arg
740 745 750

Ser Leu Cys Leu Phe Cys Tyr His Arg Leu Arg Asp Phe Ile Leu Ile
755 760 765

Val Val Arg Ala Val Glu Leu Leu Gly His Ser Ser Leu Arg Gly Leu
770 775 780

Gln Arg Gly Trp Gly Thr Leu Lys Tyr Leu Gly Ser Leu Val Gln Tyr
785 790 795 800

Trp Gly Leu Glu Leu Lys Lys Ser Ala Ile Asn Leu Leu Asp Thr Ile
805 810 815

Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Leu Glu Phe Ile Gln
820 825 830

Asn Leu Cys Arg Gly Ile Arg Asn Val Pro Arg Arg Ile Arg Gln Gly
835 840 845

Phe Glu Ala Ala Leu Gln
850

<210> 147
<211> 875
<212> PRT
<213> Artificial

<220>
<223> HIV Env consensus sequence

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<222> (148)..(149)
<223> Xaa can be any naturally occurring amino acid

<220>
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<223> Xaa can be any naturally occurring amino acid

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<223> Xaa can be any naturally occurring amino acid

<220>
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<223> Xaa can be any naturally occurring amino acid

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<223> Xaa can be any naturally occurring amino acid

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<222> (475)..(476)
<223> Xaa can be any naturally occurring amino acid

<400> 147

Met Arg Val Met Gly Thr Gln Lys Asn Cys Gln Gln Trp Trp Ile Trp
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Gly Ile Leu Gly Phe Trp Met Leu Met Ile Cys Asn Val Glu Asp Leu
20 25 30

Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Arg Glu Ala Lys Thr
35 40 45

Thr Leu Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Thr Glu Val His
50 55 60

Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln
65 70 75 80

Glu Ile Val Leu Gly Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn
85 90 95

Asn Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln
100 105 110

Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu Asn
115 120 125

Cys Thr Asn Thr Asn Val Thr Gly Asn Arg Thr Val Thr Gly Asn Ser
130 135 140

Asn Ser Asn Xaa Xaa Ala Xaa Ala Xaa Tyr Xaa Xaa Glu Glu Met Lys
145 150 155 160

Asn Cys Ser Phe Asn Val Thr Thr Glu Leu Arg Asp Lys Lys His Lys
165 170 175

Glu Tyr Ala Leu Phe Tyr Lys Leu Asp Ile Val Pro Leu Asn Asn Xaa
180 185 190

Glu Asn Ser Asn Asn Phe Thr Tyr Arg Leu Ile Asn Cys Asn Thr Ser
195 200 205

Thr Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Asp Pro Ile Pro Ile
210 215 220

His Tyr Cys Ala Pro Ala Gly Tyr Ala Ile Leu Lys Cys Asn Asn Lys
225 230 235 240

Thr Phe Asn Gly Thr Gly Pro Cys Tyr Asn Val Ser Thr Val Gln Cys
245 250 255

Thr His Gly Ile Lys Pro Val Val Ser Thr Gln Leu Leu Leu Asn Gly
260 265 270

Ser Leu Ala Glu Glu Gly Ile Ile Ile Arg Ser Glu Asn Leu Thr Glu
275 280 285

Asn Thr Lys Thr Ile Ile Val His Leu Asn Glu Ser Val Glu Ile Asn
290 295 300

Cys Thr Arg Pro Asn Asn Asn Thr Arg Lys Ser Val Arg Ile Gly Pro
305 310 315 320

Gly Gln Ala Phe Tyr Ala Thr Asn Asp Ile Ile Gly Asn Ile Arg Gln
325 330 335

Ala His Cys Asn Ile Ser Thr Asp Arg Trp Asn Lys Thr Leu Gln Gln
340 345 350

Val Met Lys Lys Leu Gln Glu His Phe Pro Asn Lys Thr Xaa Ile Lys
355 360 365

Phe Lys Pro His Ala Gly Gly Asp Leu Glu Ile Thr Met His Ser Phe
370 375 380

Asn Cys Arg Gly Glu Phe Phe Tyr Cys Asn Thr Ser Asn Leu Phe Asn
385 390 395 400

Ser Thr Tyr His Asn Xaa Xaa Xaa Xaa Asn Gly Thr Tyr Tyr Lys Tyr Asn
405 410 415

Gly Asn Ser Ser Xaa Pro Ile Thr Leu Gln Cys Lys Ile Lys Gln Ile
 420 425 430

Ile Arg Met Trp Gln Gly Val Gly Gln Ala Met Tyr Ala Pro Pro Ile
435 440 445

Ala Gly Asn Ile Thr Cys Arg Ser Asn Ile Thr Gly Ile Leu Leu Thr

450

455

460

Arg Asp Gly Gly Phe Asn Asn Thr Asn Thr Xaa Xaa Thr Glu Thr Phe
465 470 475 480

Arg Pro Gly Gly Asp Met Arg Asp Asn Trp Arg Ser Glu Leu Tyr
485 490 495

Lys Tyr Lys Val Val Glu Ile Lys Pro Leu Gly Ile Ala Pro Thr Lys
500 505 510

Ala Lys Arg Arg Val Val Gln Arg Glu Lys Arg Ala Val Gly Ile Gly
515 520 525

Ala Val Phe Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met Gly Ala
530 535 540

Ala Ser Ile Thr Leu Thr Val Gln Ala Arg Gln Leu Leu Ser Gly Ile
545 550 555 560

Val Gln Gln Gln Ser Asn Leu Leu Lys Ala Ile Glu Ala Gln Gln His
565 570 575

Met Leu Gln Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val
580 585 590

Leu Ala Ile Glu Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp
595 600 605

Gly Cys Ser Gly Lys Leu Ile Cys Thr Thr Ala Val Pro Trp Asn Ser
610 615 620

Ser Trp Ser Asn Lys Ser Glu Ala Asp Ile Trp Asp Asn Met Thr Trp
625 630 635 640

Met Gln Trp Asp Arg Glu Ile Ser Asn Tyr Thr Asn Thr Ile Tyr Arg
645 650 655

Leu Leu Glu Asp Ser Gln Asn Gln Gln Glu Lys Asn Glu Lys Asp Leu
660 665 670

Leu Glu Leu Asp Lys Trp Asn Asn Leu Trp Asn Trp Phe Asp Ile Ser
675 680 685

Asn Trp Leu Trp Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu
690 695 700

Ile Gly Leu Arg Ile Ile Phe Ala Val Leu Ser Ile Val Asn Arg Val
705 710 715 720

Arg Gln Gly Tyr Ser Pro Leu Ser Phe Gln Thr Leu Thr Pro Ser Pro
725 730 735

Arg Gly Pro Asp Arg Leu Gly Gly Ile Glu Glu Glu Gly Glu Gln
740 745 750

Asp Arg Asp Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ser Leu Ala
755 760 765

Trp Asp Asp Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg
770 775 780

Asp Phe Ile Leu Ile Ala Val Arg Ala Val Glu Leu Leu Gly His Ser
785 790 795 800

Ser Leu Arg Gly Leu Gln Arg Gly Trp Glu Ile Leu Lys Tyr Leu Gly
805 810 815

Ser Leu Val Gln Tyr Trp Gly Leu Glu Leu Lys Lys Ser Ala Ile Ser
820 825 830

Leu Leu Asp Thr Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile
835 840 845

Ile Glu Leu Val Gln Arg Ile Cys Arg Ala Ile Leu Asn Ile Pro Arg
850 855 860

Arg Ile Arg Gln Gly Phe Glu Ala Ala Leu Leu
865 870 875